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U.S. import and export prices continued to register sizable gains in 1988

Prices of U.S. imports and exports continued to advance briskly in 1988, despite the dollar's upturn; factors bolstering prices included the drought and strong global demand, which strained capacity in many basic industries

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Continuing the previous year's dual upward trend, both U.S. import and export prices posted significant increases in 1988. Following a 10.0-percent advance in 1987, the all-import index increased at a slower 4.1-percent pace in 1988. (See table 1.) Despite a third-quarter slump marked by a 1.3-percent decrease and a simultaneous, trend-reversing rise in the trading value of the dollar, the year's increase in the all-import index was the second largest since the index was first published in 1982. In contrast, the all-export index advanced at a slightly faster pace in 1988, gaining 6.3 percent after a 6.0-percent rise in 1987.[1] (See table 1.)

A variety of factors influenced international prices in 1988. Heightened demand due to increased economic strength in the United States and other industrialized countries led to higher prices for both import and export goods. In addition, the dollar abruptly changed course, strengthening in the third quarter before ending the year only slightly lower on both an import and export trade-weighted basis.[2] Finally, the high capacity utilization rates exhibited by producers of industrial materials tightened supplies of products such as metals, leading to higher raw materials costs for producers of finished goods.

After peaking in 1987, the U.S. merchandise trade deficit improved in nominal terms in 1988, but ended the year only slightly lower than in 1985. Possible explanations for the persistent trade gap include the absorbing by foreign producers of the effects of exchange rate shifts to maintain market share, and rising domestic prices that mitigated incentives to shift away from imports.

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The dollar and international prices in 1988

After rising in value against major currencies during the first half of the decade, the dollar peaked in February 1985 and subsequently commenced a downward trend that continued relatively unabated until December 1987. During this period, the dollar lost 50.5 percent of its average value against the West German mark, 50.8 percent against the Japanese yen, and 3.5 percent against the Canadian dollar.[3]

The growing strength of these and other currencies relative to the dollar coincided with a significant upswing in import prices. The extent of these price increases was dictated partly by the share of the currency shifts that foreign producers "passed through" to U.S. buyers,[4] rather than absorbing in the form of lower home currency prices. The International Price Program's nominal average exchange rate index for all import products except fuels recorded a 33.2-percent average depreciation of the dollar against a trade-weighted basket of foreign currencies between March 1985 and December 1987. Additionally, calculating the reciprocal of the dollar index[5] demonstrates that this same basket of foreign currencies appreciated by an average of 49.7 percent against the dollar for the same period. (See chart 1.) If foreign producers had passed through 100 percent of their currencies' appreciation against the dollar,

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then, other things being equal, import prices for all commodities except fuels would have risen 49.7 percent—equal to the change in the reciprocal of the exchange rate index. In fact, import prices rose at a much slower 22.5-percent pace, suggesting that the foreign producers passed through only 45.3 percent of the exchange rate shift, and absorbed the remaining 54.7 percent.[6]

Similarly, the average exchange rate index for all export commodities fell 28.2 percent between March 1985 and December 1987. The slower pace of the export index stemmed from the relatively smaller importance of the Japanese and West German currencies, which constitute slightly less than 20 percent of the export trade-weight against nearly 36 percent of the import trade-weight. Conversely, the less volatile Canadian dollar carries a heavier weight in the export index than in the import measure, accounting for nearly 30 percent of the export weight compared with a smaller 23-percent share of the import weight; the greater influence of the Canadian currency moderated the downward path of the export index.

While the trading value of the dollar for exports declined 28.2 percent between March 1985 and December 1987, export prices increased, but at a much slower 4.7-percent pace. In combination, these two developments imply a 24.8-percent decline in the foreign currency prices of U.S. exports during the period.[7] (See chart 1.)

In 1988, the U.S. dollar abruptly changed course, departing from the pattern of the previous 3 years. (See chart 2.) By January 4, the dollar had fallen to record lows of 120.2 yen and 1.5615 marks.[8] Subsequently, however, the dollar strengthened against both these currencies, briefly peaking in February before declining once again through March and April. The dollar steadily lost ground against the Canadian dollar throughout this period and the year as a whole.

By late spring, the dollar had firmed against the yen and the mark. Bolstered in part by widening international interest rate differentials favoring investment in dollar-denominated assets,[9] the dollar strengthened against the mark in May, and against the yen in June.[10] Accelerating rapidly in relative value through the summer months, the dollar reached a high of 1.9245 marks on August 10, more than 23 percent higher than its low point in early January.[11] The dollar peaked against the yen on September 2, having risen to 137.25 yen,[12] more than 14 percent higher than its January nadir.

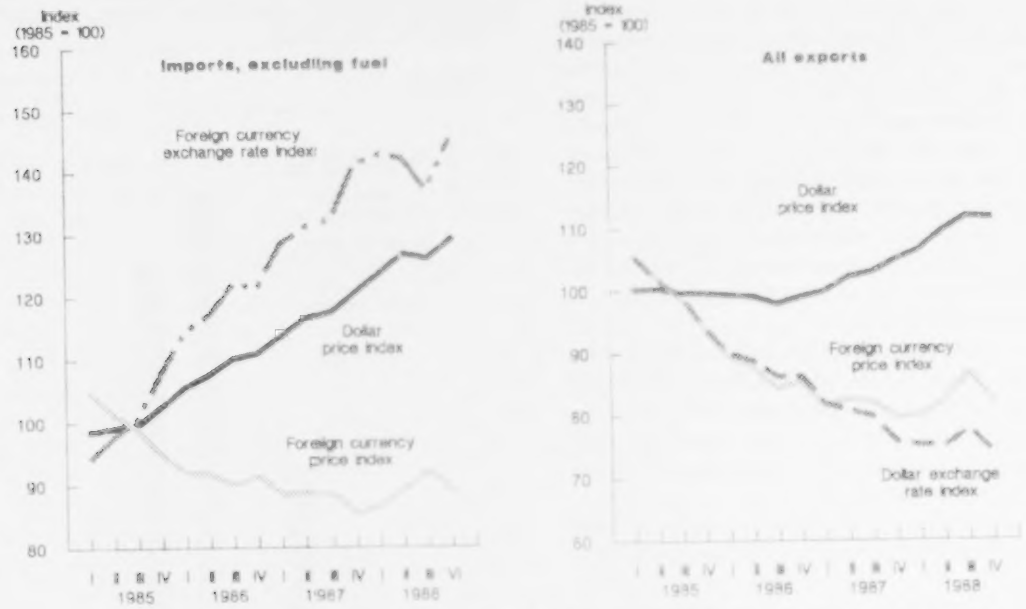
After topping out against the yen and the mark in late summer, the dollar steadily lost ground against both currencies through November. In December, the dollar edged slightly upwards, ending the year 3.6 percent lower against the yen, 8.6 percent lower against the Canadian dollar, and 7.3 percent higher against the West German mark.[13] Partly as a result of the dollar's summer rally and subsequent decline against the yen and mark, the average exchange rate indexes for both all exports and all imports except fuels also rose sharply between June and September 1988, then abruptly declined in the final quarter.

For example, the average exchange-rate index for all imported products except fuels recorded a 3.7-percent upswing

Table 1. Changes in import and export price indexes for selected categories of goods, 1987–88

SITC Code	Product category	Percent of 1985 trade value	Annual percent change		Quarterly percent change			
			December 1986 to December 1987	December 1987 to December 1988	December 1987 to March 1988	March 1988 to June 1988	June 1988 to September 1988	September 1988 to December 1988
	All imports	100.000	10.0	4.1	1.2	2.6	-1.3	1.6
0	Food	5.378	3.1	1.2	1.4	-.1	-1.1	1.1
1	Beverages and tobacco	1.090	6.3	2.2	2.2	.2	-.8	.6
2	Crude materials	3.693	11.9	17.0	5.8	6.7	-1.7	5.5
3	Fuels and related products	8.647	20.2	-20.8	-9.8	4.6	-9.0	-7.8
4	Fats and oils	.189	22.4	10.3	4.2	4.5	2.5	-1.2
5	Chemicals and related	4.219	11.2	10.8	3.7	1.9	2.4	2.3
6	Intermediate manufactured products	15.695	12.3	13.1	3.8	6.3	.1	2.4
7	Machinery and transport equipment	44.306	7.6	5.5	1.9	1.5	-.5	2.5
8	Miscellaneous manufactured articles	15.765	10.4	3.8	2.0	1.2	-1.2	1.8
		100.000	6.0	6.3	1.5	2.8	2.0	-.2
	All exports							
0	Food	9.135	5.0	20.7	.6	8.6	14.8	-3.8
1	Beverages and tobacco	1.518	4.3	4.4	2.4	.9	1.3	-.3
2	Crude materials	10.906	22.3	8.6	3.8	7.6	.6	-3.4
3	Fuels and related products	3.802	6.0	-3.9	-3.9	3.5	-3.2	-.3
4	Fats and oils	.661	13.6	12.1	13.6	5.0	4.3	-9.9
5	Chemicals and related products	12.222	18.6	11.1	4.4	3.1	2.7	.4
6	Intermediate manufactured products	7.974	6.7	8.6	2.9	2.9	1.6	1.0
7	Machinery and transport equipment	45.445	.8	3.0	.8	.8	.5	1.0
8	Miscellaneous manufactured articles	7.447	1.7	4.6	1.2	1.1	.7	1.5

Chart 1. Quarterly indexes of U.S. dollar prices, foreign currency prices, and average exchange rates for all imports except fuels, and all exports, 1985-88



Note: The foreign currency price index is calculated by multiplying the dollar price index by the U.S. dollar exchange rate index. The foreign currency exchange rate index is calculated by taking the reciprocal of the U.S. dollar exchange rate index.

in the dollar's trading value between June and September, immediately followed by a 5.5-percent depreciation in the final quarter. For the 12 months ended in December, the index fell 2.6 percent overall; this represented the smallest year-to-year depreciation since March 1985. (See chart 1.)

In the context of the relatively small decline of the dollar on a trade-weighted basis, both import and export prices posted substantial increases in 1988. Taken together, these concurrent developments imply a trend-reversing increase in the foreign currency prices of both export and import commodities during the year. In other words, the pass-through rate for imports increased to above 100 percent while that for exports fell below zero, becoming negative as foreign currency prices rose. In marked contrast to 1988, the period extending from March 1985 through December 1987 was characterized by foreign currency appreciations against the dollar that consistently outpaced the changes in the dollar prices of imports and exports. Consequently, import pass-through rates remained below 100 percent, export pass-through rates continued to be positive, and the foreign currency prices for both exports and imports followed a downward path.

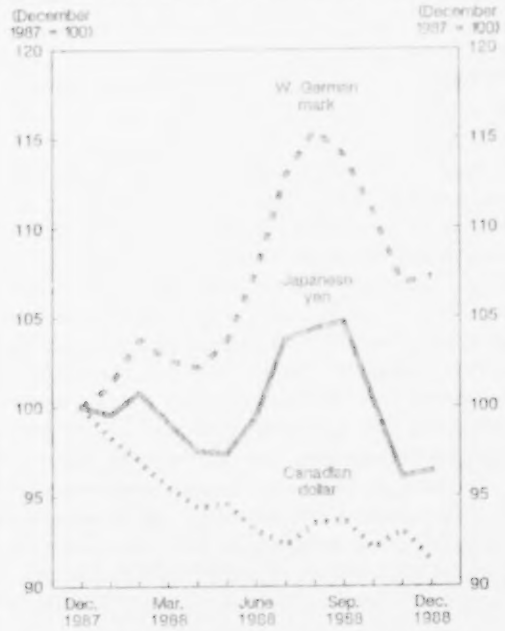
The triple-digit pass-through rates recorded for imported commodities in 1988 reflected the relative acceleration of import price increases beyond that which could be explained by the appreciation of foreign currencies against the dollar over the same period. One possible explanation of this phenomenon is that it reflected the delayed effects of past dollar depreciation.[14] This explanation is plausible when considering the price increases for imported finished goods;[15] however, the largest increases in the year's import prices occurred at the crude and intermediate products level. Inasmuch as the prices of these products are determined largely by global forces of supply and demand, the year's increases probably reflected generally rising prices for these commodities on international markets—not the delayed effects of past declines in the dollar's trading value.[16]

The significant rise of import pass-through rates and the decline of export pass-through rates in 1988 did not represent an isolated event, but the continuation of established trends. On a cumulative basis, pass-through rates for all imported products except fuels increased steadily between March 1985 and December 1988. (See chart 3.) This pattern of rising pass-through rates over time suggests that, as the dollar continued to depreciate, foreign producers passed along a greater share of their currencies' appreciation in the form of higher prices to buyers in the United States. For example, foreign producers passed through 27.4 percent of their currencies' average appreciation against the dollar be-

tween March and December 1985. By December 1986, however, that figure had risen to 43.6 percent. Subsequently, the cumulative rate edged upward to 45.3 percent for the March 1985–December 1987 period, then ballooned to 57.7 percent through December 1988. The opposite trend is apparent for exports: pass-through rates for all export products reached their peak on a cumulative basis during the March 1985–December 1986 period, subsequently decreasing through December 1987 and December 1988. (See chart 3.) The declining trend of the two more recent periods reflected a flattening and eventual reversal of the previous downward trend in the foreign currency prices of U.S. exports. The reversal was caused by more rapid increases in the dollar prices of U.S. exports.

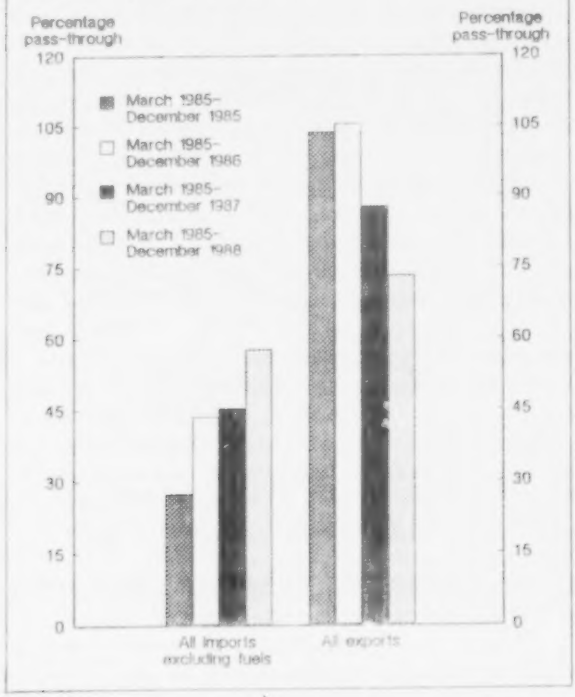
Many of the important subcategories of imported products have followed the overall pattern of increasing cumulative pass-through rates since March 1985; however, there were significant variations among groups with regard to the relative magnitudes of their pass-through rates over time. Chart 4 illustrates this by comparing the cumulative pass-through rates of eight categories of import products for the March-December 1985 period to those of the March 1985-December 1988 period. (See also charts 5 and 6.) Exchange rate fluctuations generally have the greatest impact on the import prices of finished goods, exerting less influence on the prices of imported crude and intermediate products.

Chart 2. Average exchange rate indexes (currency units per U.S. dollar) for selected foreign currencies, 1988



Source: *Federal Reserve Bulletin*, various issues, table 3.28, "Foreign Exchange Rates."

Chart 3. Cumulative pass-through rates for all imports, excluding fuels, and all exports, 1985-88



Consequently, pass-through rates are most meaningful in the case of finished goods. Generally speaking, a high pass-through rate for a particular category of finished goods suggests that the import prices of the products in question were relatively more responsive to exchange rate fluctuations during the stated period than the prices of products belonging to a category with a lower pass-through rate. However, it should be noted in this connection that factors such as competition and the degree of market concentration also strongly influence the prices of imported finished goods; hence, pass-through rates may also reflect the effects of these and other factors rather than exchange fluctuations alone.

Of the total of eight groups considered, five consistently scored the highest pass-through rates for the four cumulative periods examined; these groups were miscellaneous manufactured articles (Standard International Trade Classification 8), clothing (SITC 84), machinery and transport equipment (SITC 7), road vehicles and parts (SITC 78), and intermediate manufactured products (SITC 6). The remaining three groups consistently posted the lowest pass-through rates; these were telecommunications and sound recording and reproducing equipment (SITC 76), chemicals and related products (SITC 5), and iron and steel (SITC 67). By the end of December 1988, the eight groups were ranked in descending order of pass-through rate as follows: clothing (87.9 percent), intermediate manufactured products (72.7

percent), miscellaneous manufactured articles (69.6 percent), road vehicles and parts (53.0 percent), machinery and transport equipment (50.7 percent), iron and steel (41.9 percent), chemicals and related products (38.8 percent), and telecommunications and sound recording and reproducing equipment (16.9 percent).

The trade deficit

Despite a general decline, the trade deficit remained a major concern to policymakers and analysts alike in 1988. In contrast with developments during the previous 2 years, the merchandise trade deficit, which compares f.a.s (free alongside ship) U.S. port of exportation value-based exports with c.i.f. (cost, insurance, and freight) value-based imports, declined dramatically in 1988 to a deficit of $137.3 billion.[17] However, when the 1988 estimate is compared with the merchandise trade deficit posted in 1985 ($148.5 billion), the apparent decline is only about 7.5 percent. In the intervening years, record-high deficits of $155.1 billion in 1986 and $170.3 billion in 1987 were recorded,[18] with U.S. import volumes increasing 27 percent against an export boom of 51 percent.[19] In addition, the balance of trade began to decline toward the end of 1988, finishing the year with a fourth-quarter deficit of $34.4 billion. A review of these factors raises the question of why there has not been greater improvement in the U.S. balance of trade.

The intent behind the 1985 decline of the dollar, coordinated by the Group of Seven nations,[20] was to boost import prices, leading to import volume declines as U.S. purchasers of foreign-made goods turned to domestic suppliers.[21] This import volume decline, along with the rise in export volumes expected as U.S. exports became less expensive on the world market, would then result in an improved balance of trade.

In defiance of theoretical expectations, the results of the declining dollar have been disappointing, with import volumes *increasing* even in the face of expensive foreign currencies, albeit at a lesser rate than export volumes. There are many possible explanations for the unexpected rise in import volumes, including the conscious decision by U.S. importers to hold the line on price increases and thus absorb exchange rate losses in order to retain their share of the U.S. market. In addition, the willingness of U.S. consumers to pay increasingly higher prices for imported goods and the fact that some goods are no longer produced domestically have contributed to the rise in import volumes.

For the declining dollar to result in a more favorable balance of trade, foreign producers would have to pass through at least some of their currencies' appreciation to U.S. consumers in the form of higher prices. The price adjustment would then lead to decreased import volumes as U.S. consumers turned to domestic sources.

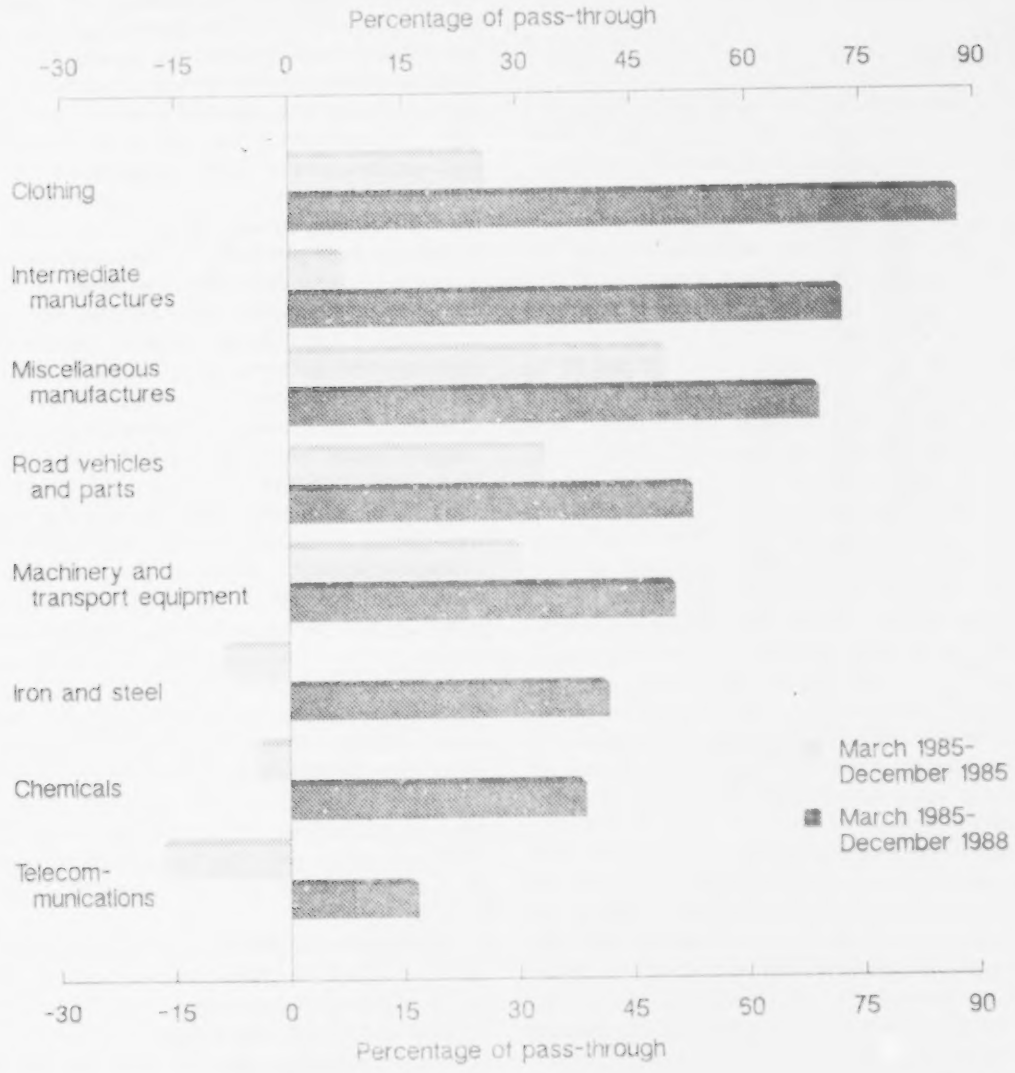
As mentioned previously, foreign producers have passed through some of the dollar's decline to U.S. consumers, but increases in import prices have lagged behind currency changes. Uncertainty on the part of foreign producers regarding the duration of the dollar fluctuations could at least partially explain this situation. In addition, many U.S. import transactions are based on contractual agreements that often specify payment in fixed numbers of currency units, which cannot be adjusted to reflect changes in relative currency values over the life of the contract.[22] Also, inputs required for production by foreign companies are, in some cases, purchased inexpensively in the U.S. market, cutting down on manufacturing costs and thus allowing the foreign-made products to remain price competitive in this country.

The relationship between U.S. domestic prices and the price of U.S. imports is an observable factor in the struggle to close the trade gap. Last year, domestic producer prices increased 4 percent against a much smaller rise of 2.2 percent in 1987, making the 1988 annual increase the highest since 1981.[23] Although, by structural definition, domestic producer prices are not perfectly analogous to U.S. import prices, it is interesting to note that import prices increased at an almost equal rate of 4.1 percent in 1988. In general, it appears that the rate of increase in domestic prices has not been greatly exceeded by import price growth, with the result that there has been little dampening of the vast American appetite for imports.

Additionally, U.S. consumers of such products as electronics, VCR's, camcorders, and photographic cameras have been forced to pay increasingly higher prices because the markets for these consumer goods are partially, and sometimes totally, saturated by imports. For example, import prices for the popular camcorder increased 261 percent between 1985 and 1988, but because there are few domestic manufacturers of this particular product, consumers had little choice but to pay a higher price for quality imported items. And because camcorder sales have advanced 306 percent since 1985,[24] the foreign exchange rate changes have, in this instance, adversely affected the U.S. balance of trade.

The Nation's major trading partners registered significant surpluses against the United States in 1988, although many were well below those of a year ago. Japan continued to lead the field of exporters with a trade surplus of $55.4 billion with the United States, down from $59.8 billion in 1987. Other significant surpluses were recorded by the Newly Industrialized Countries (NIC's), such as Singapore ($2.5 billion); Hong Kong ($5.1 billion); South Korea ($9.9 billion); and Taiwan ($14.1 billion). Together, those four nations enjoyed a surplus of $31.6 billion vis-a-vis the United States. West Germany registered a surplus of $13.1 billion, while the European Community's posted surplus equaled $12.8 billion in 1988.[25] Finally, the Latin American Free Trade Association countries recorded a combined surplus of $11.5 billion,[26] compared to $14.9 billion in 1987. Of the aforementioned areas, only Singapore had a greater surplus with the United States in 1988 than in 1987 ($2.3 billion).

Chart 4. Cumulative pass-through rates for selected imports, 1985-88



The South Korean surplus, however, remained unchanged from the year earlier.[27]

One measurable result of the decline of the dollar has been the influx of foreign investment to the United States. Lured by business and real estate opportunities that are comparatively inexpensive due to exchange rate factors, many foreign investors have set their sights on the U.S. market. Net foreign assets in the United States have risen 61.5 percent since the initial decline of the dollar in 1985. In addition, direct foreign investment in the United States rose from $19.02 billion in 1985 to $42.22 billion in 1988, an increase of just over 45 percent.[28]

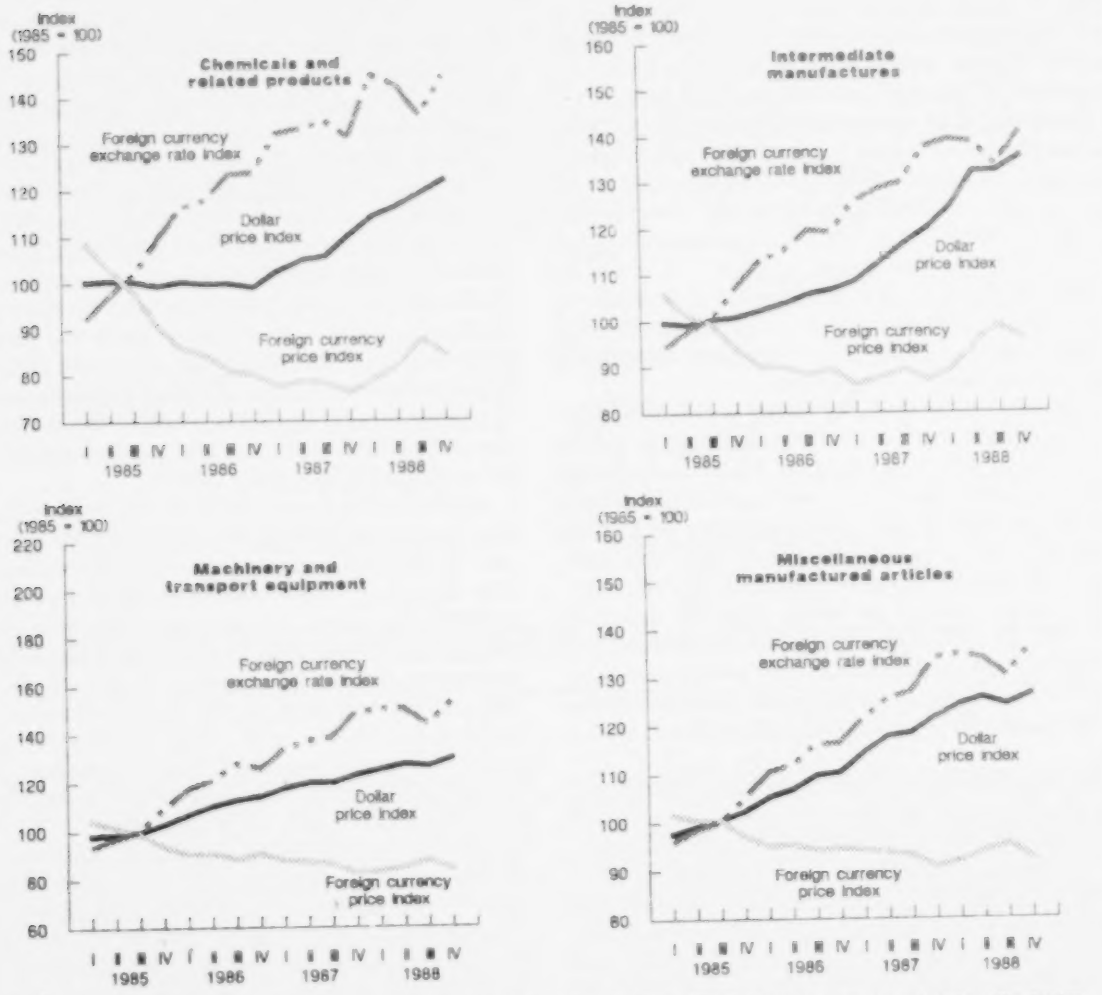
Although the balance of trade has shown only marginal improvement as a result of the decline in the dollar, the U.S. economy has enjoyed substantial economic growth boosted by increased export sales. While the export component is estimated to account for between 6 and 9 percent of total GNP, it made up more than 35 percent of total GNP growth in four of the eight quarters ended December 1988.[29] Exports surged to $322.2 billion in 1988, 21 percent above the recordbreaking $254.1 billion posted in 1987.[30] U.S. export growth was stimulated by world economic growth, the declining dollar, and stable labor costs.[31]

It is noteworthy that, under the terms of the 1988 Om-

nibus Trade Bill, the U.S. Department of Commerce will this year begin releasing merchandise trade statistics solely based on the customs import value.[32] When the customs-based merchandise trade deficit recorded in 1988 ($118.7 billion) is compared with that of 1987 ($152.1 billion), a more accurate picture of the U.S. balance of merchandise trade emerges. This is true because, unlike the c.i.f. value used to develop estimates for years before 1989, the customs-based value excludes the cost of insurance and freight to the U.S. port of entry. Because insurance and freight are not actual products, but rather services, they should be eliminated from the merchandise trade figures. In addition, there is often no way of knowing if the cost of insurance and freight is being paid to a foreign or domestic supplier. Prices are based mainly on an f.o.b., or "free on board," basis, meaning that the price of the product at the foreign port is used when the trade statistics are compiled.

In addition to the emphasis on customs-based import values, the 1988 trade bill requires that the Administration research the means by which a volume-based measure of monthly merchandise trade flow could be produced in addition to the currently released dollar values. Accordingly, the U.S. Department of Commerce plans to begin publishing a monthly volume measure of merchandise trade in mid- to

Chart 5. Quarterly indexes of U.S. dollar prices, foreign currency prices, and foreign currency exchange rates for selected categories of imports, 1985-88



Note: The foreign currency price index is calculated by multiplying the dollar price index by the U.S. dollar exchange rate index. The foreign currency exchange rate index is calculated by taking the reciprocal of the U.S. dollar exchange rate index.

late 1989. As part of this effort, the Bureau of Labor Statistics' International Price Program has been expanded to allow for the collection of data in the interim months between quarterly reports. The resulting monthly pricing indexes will be used by the Commerce Department to deflate the merchandise trade statistics currently being reported to reflect volumes traded.

Import price trends

Energy.—U.S. petroleum self-sufficiency was dealt a blow in 1988 as imports of crude petroleum increased by 6.3 percent and domestic oil production fell by 2.5 percent to 8.14 million barrels per day (mb/d), its lowest level since 1977.[33] While U.S. production continues its decline, consumption has been steadily rising in recent years. It was up almost 3 percent in 1988,[34] due to a general decline in prices, increased economic activity, and an erosion of public concern over fuel conservation. U.S. reliance on foreign oil, represented by net imports of crude petroleum and products as a percentage of all petroleum supplied to the U.S. market, increased from 27.3 percent in 1985 to 37 percent in 1988.[35] Although U.S. reliance on foreign oil appears to be on the rise once again, the 1988 figure still is well below the 43.1 percent recorded in 1979.[36] The Nation's increased reliance on imported fuels is a direct result of declining prices on the world market. Import energy prices fell 20.8 percent in 1988, reflecting price decreases for crude petroleum (−27.6 percent), petroleum products (−14.4 percent), and gasoline and other light oils (−11.7 percent).

Crude oil prices declined 27.6 percent in 1988 amid widespread overproduction and a lack of cartel discipline in price setting among the Organization of Petroleum Exporting Countries (OPEC). (See chart 7.) OPEC began 1988 operating under an agreement signed in December 1987 by 12 of the 13 member nations; Iraq did not sign the pact. This agreement set the cartel's production level at 15.06 mb/d, with a benchmark price of $18 per barrel. (Had Iraq signed the agreement, the OPEC assigned production level would have increased to 16.6 mb/d.) Because OPEC producers were unable to compromise on a new agreement until late November, this production level remained in effect through most of 1988.

The December 1987 agreement appeared to carry very little weight, as many of the member nations exceeded their quotas and began selling oil according to a flexible pricing system. Typifying the situation was Saudi Arabia, which offered a $3 a barrel discount to European, Japanese, and American buyers. In addition, the United Arab Emirates, Kuwait, Qatar, Venezuela, Libya, Indonesia, Gabon, and Ecuador all produced at levels that exceeded their OPEC quotas. The OPEC members (including Iraq) were producing at a level of 19.64 mb/d in June 1988,[37] well above the OPEC-assigned quota of 15.06 mb/d (16.6 mb/d when Iraq's nonbinding quota is included).

U.S. oil imports were 17.3 percent higher in the first half of 1988 than in the comparable period in 1987, with imports averaging 4.67 mb/d.[38] In June, OPEC producers supplied approximately 53 percent of U.S. imports, with Saudi Arabia enjoying the largest share—15.6 percent. Other large oil exporters to the United States during the month of June included: Canada (30.7 mb); Mexico (23.0 mb); and Nigeria (21.1 mb).[39]

Although the OPEC member nations met periodically during 1988, they were unable to agree on a new accord. The major points of contention among the oil-producing nations were: the war between Iran and Iraq, Iraq's insistence on quota parity with Iran, reallocation of the Neutral Zone's production for quota purposes, and the official definition of condensates for quota purposes. In general terms, petroleum condensates are gaseous hydrocarbons that turn into gasoline-rich liquids at ground level. As they are currently excluded from quotas, condensates could add 1.5 mb/d to 1.8 mb/d to OPEC production levels, depending on the compromise definition. Venezuela, a large condensate producer, would be most affected by this decision.

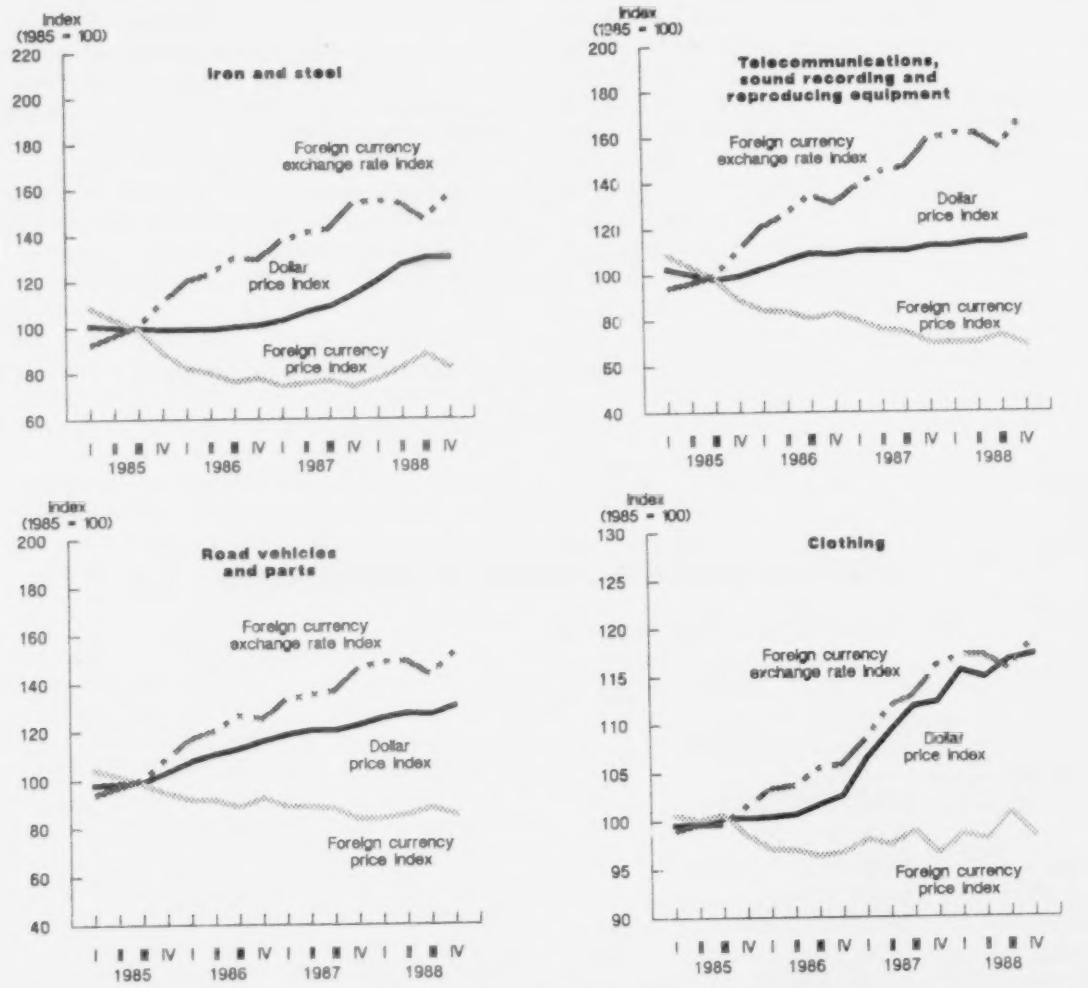
Iraq has refused to sign any OPEC agreement since 1986, insisting that it will continue to produce above its assigned quota until it is given quota parity with Iran. In addition, the reallocation of the production of the Neutral Zone—the zone under Saudi Arabia's and Kuwait's joint control—production has been a major hurdle for OPEC. Production from the Zone had been used by Saudi Arabia and Kuwait to finance the Iraqi war effort. OPEC now wants the Neutral Zone production to be counted against the quotas for Saudi Arabia and Kuwait. The lack of a compromise in these three areas led to overproduction by OPEC and decreased prices on the world market throughout 1988.

August brought a cease-fire in the war between Iran and Iraq, leading analysts to predict the rededication of a united OPEC to the common goal of reasonable petroleum prices. This was not to be the case, however, as Iraq and Iran continued to produce at high levels, channeling their oil profits from the war effort into financing their postwar reconstruction projects. The remainder of the OPEC producers followed suit, with the result that overproduction continued to drive down prices on the world market. U.S. import prices of crude petroleum fell 11 percent in the third quarter of 1988, during which OPEC members were producing 21.6 mb/d,[40] well above their 15.06 mb/d quota.

Iraq's oil infrastructure escaped basically unscathed from the war and was producing at a level of 2.7 mb/d in September.[41] This is well above that nation's production quota of 1.54 mb/d set prior to 1986. In contrast, Iran is currently producing below its 2.4 mb/d quota because its oil fields were damaged extensively in the Gulf conflict.

In November 1988, in conjunction with an apparent end to the Gulf conflict, all 13 OPEC members signed an agreement to reduce their combined output to 18.5 mb/d. This was a substantial decrease from the annual production level

Chart 6. Quarterly indexes of U.S. dollar prices, foreign currency prices, and foreign currency exchange rates for selected categories of imports, 1985-88



Note: The foreign currency price index is calculated by multiplying the dollar price index by the U.S. dollar exchange rate index. The foreign currency exchange rate index is calculated by taking the reciprocal of the U.S. dollar exchange rate index.

of 20.41 mb/d recorded in 1988.[42] Under this new plan, Iraq would gain official quota parity with Iran, although Iran would retain its 14.7-percent market share. Also under the agreement, the United Arab Emirates appeared to accept their assigned quota, and 400,000 b/d of Neutral Zone production was reassigned to Saudi Arabia and Kuwait. The issue of defining condensates for quota purposes was not addressed at the November 1988 meeting. Price increases from this new agreement, should OPEC producers choose to adhere to the pact, would ultimately lead to further worsening in the U.S. balance of trade. With declining domestic production, the U.S. would have little choice but to purchase foreign crude petroleum, regardless of the price set by OPEC.

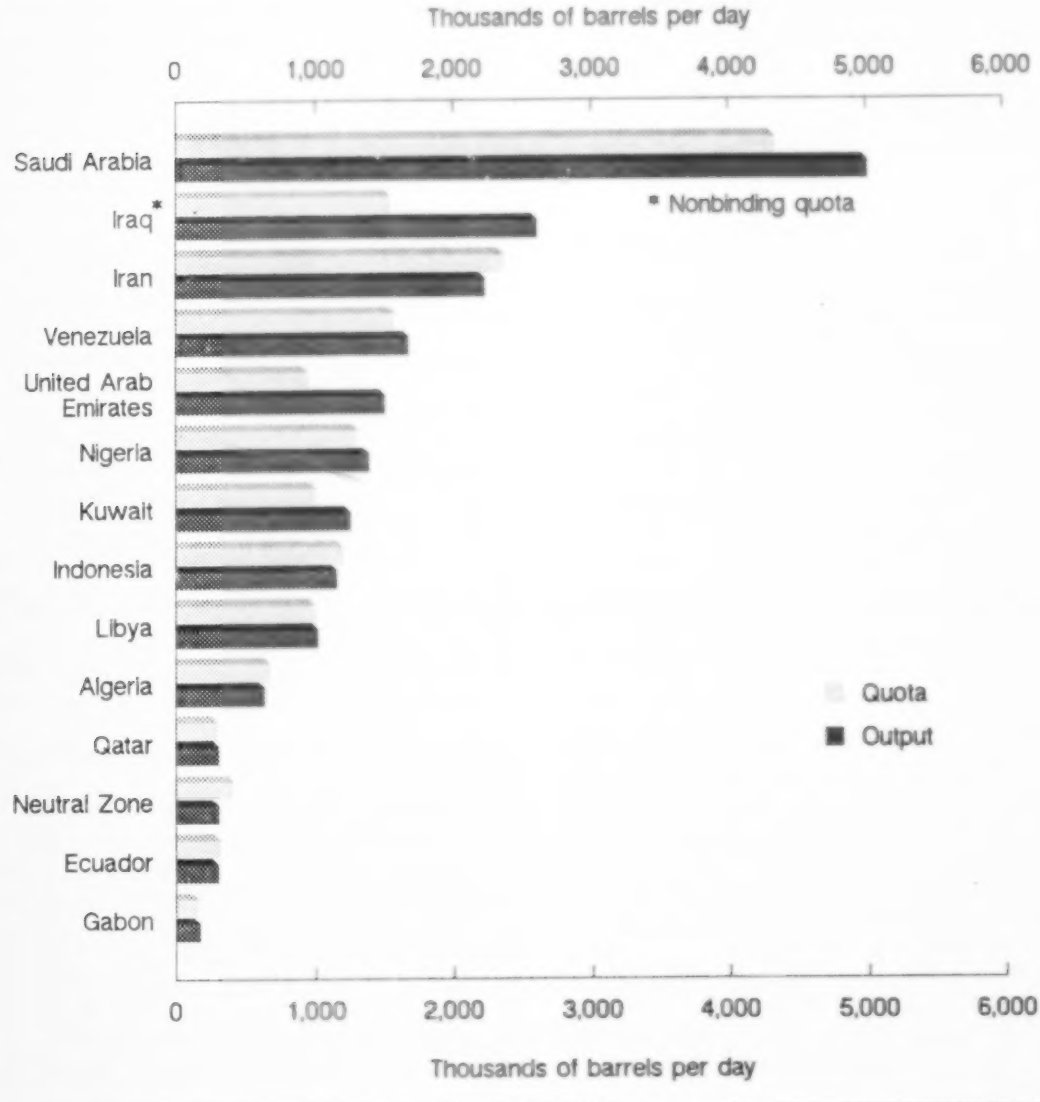
In contrast to crude petroleum costs, imported natural gas prices increased in 1988. The annual rise of 4.2 percent was due mainly to escalating U.S. consumption, which posted a 5.8-percent increase over the 1987 level.[43] Use of natural gas became more prevalent in the residential, commercial, and industrial sectors in 1988, with consumption by electric utilities being the only reported instance of declining usage for the year.[44] Rising consumption levels in the commercial and industrial sectors were due to economic activity, air pollution concerns, and efforts to fortify U.S. energy security.

Canada is the major supplier of natural gas to the United States, accounting for imports of 1.29 trillion cubic feet (TCF) in 1988. This is significantly greater than the 0.99 TCF that Canada exported to this country in 1987, as Canada increased its share of U.S. imports of natural gas from 5.7 percent in 1987 to 7.0 percent in 1988.[45] Increasing demand for natural gas in the United States and improved access to the U.S. market have been the major attractions for Canadian exporters. In an effort to increase their country's share of the U.S. market, Canada's National Energy Board last year granted permission to Alberta Gas to export 2.0 TCF to California over a 24-year period. In addition, the Board approved the expansion of the Trans-Canadian Pipeline, which supplies natural gas to the Northeast corridor of the United States.

Intermediate manufactures. Topping 1987's vigorous 12.3-percent advance, prices of imported intermediate manufactures such as iron and steel, nonferrous metals, paper and paperboard, and rubber manufactures increased 13.1 percent overall in 1988, their largest 12-month gain since the dollar began its fall in the spring of 1985.

More than 75 percent of the year's robust overall advance in the import prices of intermediate manufactured products was attributable to rapidly rising prices for imported metals and intermediate metal products. Leading the advance,

Chart 7. Crude petroleum quotas versus output for OPEC countries, 1988



prices of imported nonferrous metals rose at a 35.9-percent pace during the year. These increases were accompanied and reinforced by a 14.2-percent escalation of imported iron and steel prices, coupled with a 12-month advance of 11.1 percent in the prices of imported intermediate metal manufactures.

In addition to metal products, all other major commodity groups within the intermediate manufactures category contributed to the overall increase in prices by recording significant price gains in 1988: Imported leather and furskin prices rose 8.4 percent. Prices of imported rubber manufactures increased 6.2 percent. Import prices of paper and paperboard products gained 6.8 percent. And prices of imported nonmetallic mineral manufactures, such as building stones, hydraulic cement, ceramics, glass, and semiprecious gemstones, advanced 8.1 percent.

In 1988, increases in the U.S. dollar prices of imported iron and steel products and miscellaneous metal manufactures followed the general pattern established for all imported products by increasing at a more rapid pace than the average exchange rate of foreign currencies against the dollar, the first evidence of a trend-reversing rise in the foreign-currency prices of imports in these categories since March 1985. In contrast, U.S. dollar prices of imported nonferrous metals outpaced the dollar's average fall against foreign currencies for the first time in 1987. This trend continued in 1988, with a 35.9-percent increase in dollar prices combining with a 3.7-percent average decline of the dollar to yield a 30.9-percent rise in the foreign-currency prices of these products.[46]

The rapid escalation of world prices for primary nonferrous metals and ferroalloys propelled the overall rise in the prices of imported intermediate metal products in 1988. Owing in part to a vigorous world economy and resurgent export demand for U.S. products, world demand for metals grew substantially during the year.[47] Concurrently, capacity constraints and production disruptions combined to tighten free-world supplies of many metals. As a result, prices of many important nonferrous base metals and ferroalloys increased significantly: imported aluminum prices increased 46.7 percent, imported copper prices rose 31.4 percent, imported nickel prices advanced 130.7 percent, imported zinc prices increased 63.8 percent, and prices of imported ferroalloys rose 80.1 percent.

Additionally, the year's sharply higher prices for ferroalloys filtered down into the prices of imported specialty steels[48]—such as stainless and tool steel—which are manufactured using ferroalloys. The resultant increases in the prices of these products accounted for much of the year's growth in prices of imported iron and steel.

The rapid and sustained upward trend in the world prices of many nonferrous metals and ferroalloys in 1988 resulted in part from stronger demand emanating from a vigorous U.S. economy, which was undergoing a sustained economic expansion entering its sixth year.[49] Demand for many base metals and industrial materials is generally tied to the overall level of activity in the construction and industrial sectors of an economy. Fueled in part by an export-led revival of the U.S. manufacturing sector,[50] overall industrial production grew at a seasonally adjusted rate of 4.7 percent in 1988, the highest rate of growth since 1984. Concurrently, manufacturing output increased at an even more rapid 5.2-percent pace. In addition, output of metal-intensive consumer durables rose 9.8 percent, including a 25.2-percent increase in automobile and truck output, a key market for many metals. Production of business equipment increased 7.6 percent, including a 12.6-percent rise in the output of manufacturing equipment and a 14.7-percent increase in the production of transit equipment. Finally, output of construction supplies increased 5.9 percent.[51] In the words of Robert Lesemann, director of base metals research for Research Strategies Inc., suppliers of metals benefited during the year from a "capital spending boom" that initiated a "very metal-intensive phase of the economic cycle."[52]

In the face of burgeoning demand, producer capacity constraints played a major role in boosting prices of metals and many other industrial materials in 1988. This developing trend sparked fears earlier in the year that primary industries might develop into what Alan Greenspan, chairman of the Federal Reserve Board, described as "inflationary bottlenecks."[53]

In a recent study prepared for Morgan Stanley, economist Stephen Roach contended that the accelerated growth of demand for U.S. exports had at first centered chiefly on producers of primary products who, in contrast to advanced processors, had faced few quality obstacles in international markets.[54] In Roach's view, the uneven growth in export demand had led to the much higher operating rates exhibited by U.S. primary processors. In this connection, domestic producers of both nonferrous metals and iron and steel were operating at 89.5 percent of capacity in the third quarter of 1988, paper producers were operating at an even higher 95.3 percent of capacity, rubber and plastics producers were utilizing 88.7 percent, and textiles producers were operating at 84 percent.[55] Thus, by midyear, these sectors were utilizing a share of stated capacity that exceeded both the 83.8-percent average for all sectors in the third quarter,[56] and the 83.3-percent average for the year as a whole.[57] Moreover, domestic producers of aluminum and copper were operating at nearly 100 percent of stated capacity by the beginning of the second quarter.[58] Such capacity constraints helped boost world prices for industrial commodities generally, and for metals in particular, throughout the year.[59]

Outside of the United States, producers of nickel and ferroalloys, such as ferrochrome and ferrovanadium, also experienced tight capacity in 1988. At least in part because of unexpectedly great demand from stainless steel producers since 1987,[60] the free world's output of nickel was estimated at approximately 93 percent of capacity by the second quarter of the year; this high operating rate coincided with significant drawing down of producer inventories worldwide.[61]

Producers of ferroalloys also were hard pressed to satisfy stronger demand from specialty steel makers in 1988; South African producers of ferrochrome and ferrovanadium (the principal world suppliers) were reportedly stretched to the limits of capacity and carrying little or no inventory by the end of the year.[62]

Due in part to these tight capacity conditions, already strong demand pressures in the international markets for nonferrous metals were frequently intensified during the year by periodic market panics sparked by fears of impending shortages. This "panicky market psychology" prompted inventory building in excess of current needs and contributed to price volatility.[63]

With capacity utilization rates already high, several major production disruptions further tightened supplies of nickel, copper, and zinc at various points throughout the year. Such supply shocks generally precipitated a spate of hedge buying that rapidly drove prices upward.

In the nickel market, for example, a dispute between the Government of the Dominican Republic and a major nickel producer curtailed badly needed shipments of ferronickel for 5 months. Coupled with several subsequent interruptions of nickel and ferronickel shipments from other major suppliers, the Dominican situation became a major factor in the rapid escalation of nickel prices during the first half of the year.[64]

Supply problems also plagued the copper market in 1988. Output from Africa, Peru, and Chile was restricted, producing an extremely tight market for copper in the fourth quarter.[65] The most important factor underlying this tightness took the form of nationwide strikes by Peruvian miners that brought the production of this major world supplier to a halt on two occasions in the second half.

The Peruvian situation also tightened the zinc market late in the year by bringing production to a virtual standstill in a country that supplies about 11 percent of free-world zinc output.[66]

As a consequence of its labor woes, Peru suffered an estimated loss of 100,000 tons of copper production in 1988.[67] African copper output also declined during the year, falling about 110,000 tons below the 1987 level.[68] The shortfall was primarily a consequence of capital equipment shortages, employee health problems stemming from acquired immune deficiency syndrome, transportation difficulties, and inadequate supplies of acid (a key input in metal refining) in both Zambia and Zaire, the major African copper-producing countries.[69] Finally, a series of production disruptions in Chile, the world's largest copper producer, reduced output from that source by about 85,000 tons during the year.[70] Accordingly, by mid-October, worldwide stocks of refined copper had fallen to their lowest levels since the American Bureau of Metal Statistics began keeping records in 1950.[71]

Machinery and transport equipment. U.S. import prices of machinery and transport equipment rose 5.5 percent in 1988 against significantly larger price increases of 7.6 percent in 1987 and 10.9 percent in 1986. Noteworthy aggregate level price increases were reported in 1988 for metalworking machinery (6.4 percent), electric machinery and equipment (9.3 percent), and road vehicles and parts (6.7 percent).

Imports of machinery and transport equipment account for approximately 44 percent of the all-import price index, making their price movements particularly important relative to the other product categories. Import penetration tends to be more acute in the machinery and transport equipment area with transplant activity—production by establishments of foreign-owned firms located in this country—increasing markedly along with the general decline of the U.S. dollar. This is particularly true for the machine tool and automobile industries, whose domestic markets are partially protected by voluntary restraint agreements. In addition, domestic manufacturers of products included in the machinery and transport equipment index have been hard hit by recent price increases for inputs essential to production.

Prices for imported automobiles increased in 1988 as the percentage share of the U.S. market held by foreign producers declined. Import prices for road vehicles and parts increased 6.7 percent, with passenger automobiles recording an annual price rise of 6.9 percent. Import prices for road vehicles and parts increased a comparatively smaller 5.6 percent in 1987, while prices for passenger automobiles rose 4.4 percent in the same year. The import share of the U.S. automobile market declined from a record high of 31.1 percent in 1987 to 29.1 percent in 1988.[72] In addition, import unit sales fell 3.01 percent in 1988 as compared to 1987.

Japan extended its 2.3-million-unit limit on passenger car exports to the United States in 1988. This marks the ninth straight year of the voluntary restraint agreement negotiated between the two countries. As in 1987, Japanese auto manufacturers failed to meet their 2.3-million-unit quota, importing 2.11 million units in 1988.[73] The import share of the U.S. new car market held by Japanese manufacturers declined to 19.8 percent in 1988 after recorded shares of 20.7 percent and 21.3 percent in 1986 and 1987, respectively.[74]

U.S. automobile imports declined in 1988 as a result of import price increases, a weaker overall U.S. automobile market as compared to 1987, and the continued increase in transplant production, requiring fewer exports destined for the U.S. market. Excluding joint ventures, four of the major Japanese automakers combined to produced 22.5 percent more cars in the United States in 1988 than in 1987.[75] All of these transplant manufacturers have plans to significantly increase production at their U.S. establishments in the next few years.[76] Transplant production by America Honda Motor Company, a subsidiary of Honda Motor Company Ltd. of Japan, has become so firmly entrenched in the U.S. domestic market that 49.2 percent of their U.S. sales in 1988 came from their U.S. facility.[77]

Taiwan and South Korea were the only U.S. trading part-

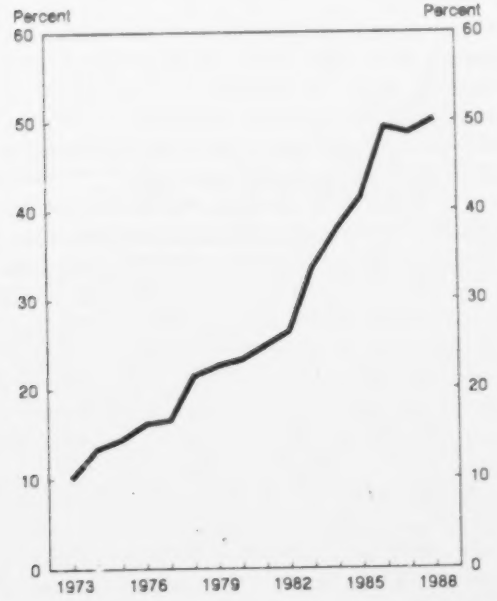
ners to record increased unit sales in 1988. Taiwan increased its market share by 3.9 percent, compared with increases of 3.4 percent and 1.5 percent in 1987 and 1986, respectively.[78] South Korea's import unit sales increased 17.3 percent in 1988 alone despite an automotive industry strike in that country.[79]

Sales of imported luxury cars declined in 1988 as European manufacturers continued to feel the effects of the declining dollar. Decreasing dollar sales for countries that export many luxury or sport automobiles were reported in 1988 for France (33.3 percent), West Germany (27.6 percent), Italy (14.5 percent), and Sweden (12.5 percent).[80] According to the *U.S. Industrial Outlook/1989*,[81] the imminent introduction of Japanese entries to the U.S.-dominated luxury car market offers perhaps the greatest challenge ever faced by domestic and European automakers.

U.S. import prices for metalworking machinery rose 6.4 percent in 1988, further driving down the Nation's balance of trade for such products. The U.S. trade deficit in the metalworking machinery sector rose from $1.48 billion in 1987 to $1.52 billion in 1988,[82] despite an increase in export activity.

As is the case in the automobile industry, voluntary restraint agreements have helped to boost U.S. production of machine tools, at the same time that foreign-based domestics (that is, transplants) have increased rapidly. (See chart 8.) By way of example, Japanese imports into the U.S. machine tool market has decreased since the commencement of that nation's voluntary restraint agreement with the United States, but over the same period, the number of foreign-based domestics originating in Japan has increased rapidly, with 10 companies having moved their production of machine tools to the United States since 1986.[83] Foreign manufacturers find the idea of relocating production to the United States appealing because it enables them to bypass the voluntary restraint agreements and to take advantage of the exchange rate benefits gained through the decline in the dollar.

Chart 8. U.S. machine tool imports as a percentage of U.S. machine tool consumption, 1973-88



Source: NMTBA (National Machine Tool Builders' Association)—The Association for Manufacturing Technology.

Import prices for electrical machinery and equipment increased 9.3 percent in 1988, due mainly to increased demand for these products. Particularly significant price increases were reported for semiconductors and related equipment; the index for these items rose 15.7 percent in 1988 because of a shortage of integrated circuits. Prices of equipment for distributing electricity increased 11.9 percent over the year, due to exchange rate factors and the rising cost of copper.

Export price trends

Food. Propelled by the worst drought since the mid-1930's,[84] the index for exported food products such as grains, fruits, vegetables, meat, and fish escalated rapidly during the middle two quarters of 1988, rising 24.7 percent between March and September. (See chart 9.) As a consequence of this midyear surge, prices of food products sold to foreign buyers advanced at a 20.7-percent annual rate in 1988, following a much slower 5.0-percent pace recorded in 1987. Furthermore, the large annual increase occurred despite the moderating effects of a 0.6-percent increase in the first quarter coupled with a 3.8-percent downturn in the fourth quarter.

A rapid, drought-induced escalation of grain prices during the summer months accounted for nearly 90 percent of the increase in the export food index in 1988. Led by large increases in the export prices of wheat and corn, the index for exported grain climbed 31.8 percent during the year, rising 35.7 percent during the drought-stricken period of March through September alone.

Export prices also advanced at a substantially faster pace in most of the other major commodity groups in the food category: The index for exported meat gained 11.3 percent on the strength of a 9.4-percent increase in the export prices of beef and veal, combined with substantial increases in the prices of exported poultry and edible meat offals. The prices of exported fish increased 25.6 percent, largely due to an abnormally small salmon catch during the year's third quarter. The export fruit and vegetables index advanced 9.7 percent, primarily because of a 20.9-percent advance in the prices of exported vegetables. Finally, the index for exported noncereal animal feeds advanced 8.1 percent, reflecting sharply increased export prices for soybean oil-cake that coincided with a large jump in domestic soybean prices during the second quarter of the year.

The only price decrease registered in the food category during 1988 was for exported rice. After soaring 108.8 percent between September 1987 and March 1988, the export index for rice plummeted 33.6 percent through the subsequent 9 months of 1988, resulting in a 22.4-percent overall decline for the year. The extensively irrigated U.S. rice crop was relatively unaffected by the drought, rebounding sharply during the 1988 crop year. Overall production was 23 percent higher than in 1987, as a result of a U.S. agricultural policy allowing more acres to be planted. The year's bumper crop in the United States coincided with a projected resurgence in rice production overseas. In October, total foreign rice production was forecast at a record 319.8 million tons for fiscal 1989, up more than 4 percent from the drought-reduced levels of fiscal 1988. The resultant increase in global supplies intended for export was expected to depress rice prices both in the United States and abroad.[85]

U.S. exports of farm products accelerated sharply in fiscal 1987, and continued to expand in fiscal 1988 despite the drought. The sustained growth in farm exports during the past 2 fiscal years resulted in part from the combined effects of the U.S. Export Enhancement Program,[86] a generally strong world economy, and a weaker dollar, which continued to make U.S. farm produce competitive on world markets in 1988, despite increased prices.[87] (See chart 9.) Two other developments helped promote farm exports during the year: In June, the signing of a U.S.-Japan trade liberalization pact was expected to boost U.S. exports of beef and citrus products.[88] Partly as a result, U.S. beef exports rose nearly 11 percent in 1988.[89] Subsequently, the extension of the U.S.-U.S.S.R. Long-Term Agreement, which had expired on September 30, prompted large Soviet corn purchases during the final month of the year,[90] and further ensured continued Soviet purchases of a minimum of 9 million metric tons of U.S. grain per year until the extension expires on December 31, 1990.[91]

The dollar volume of total agricultural exports increased almost 27 percent in fiscal 1988, reaching $35.3 billion by year's end.[92] Increases in the quantity of farm exports accounted for about half of the nominal rise; higher prices accounted for the other half.[93] In quantity terms, farm exports reached their highest level in the past 5 fiscal years, rising 14.5 percent above the fiscal 1987 level to 148.3 million tons.[94] The largest markets for U.S. agricultural exports during fiscal 1988 included the European Community, Japan, Korea, the Soviet Union, and Canada. The fastest growing markets were the Soviet Union, Japan, China, Algeria, and India.[95]

The 27-percent nominal increase in agricultural exports in fiscal 1988 occurred in conjunction with a nominal increase in imports of barely 2 percent. The result was a sharp expansion of the U.S. agricultural trade surplus. Totaling $14.3 billion, the fiscal 1988 surplus was nearly 96 percent higher than that posted for fiscal 1987.[96]

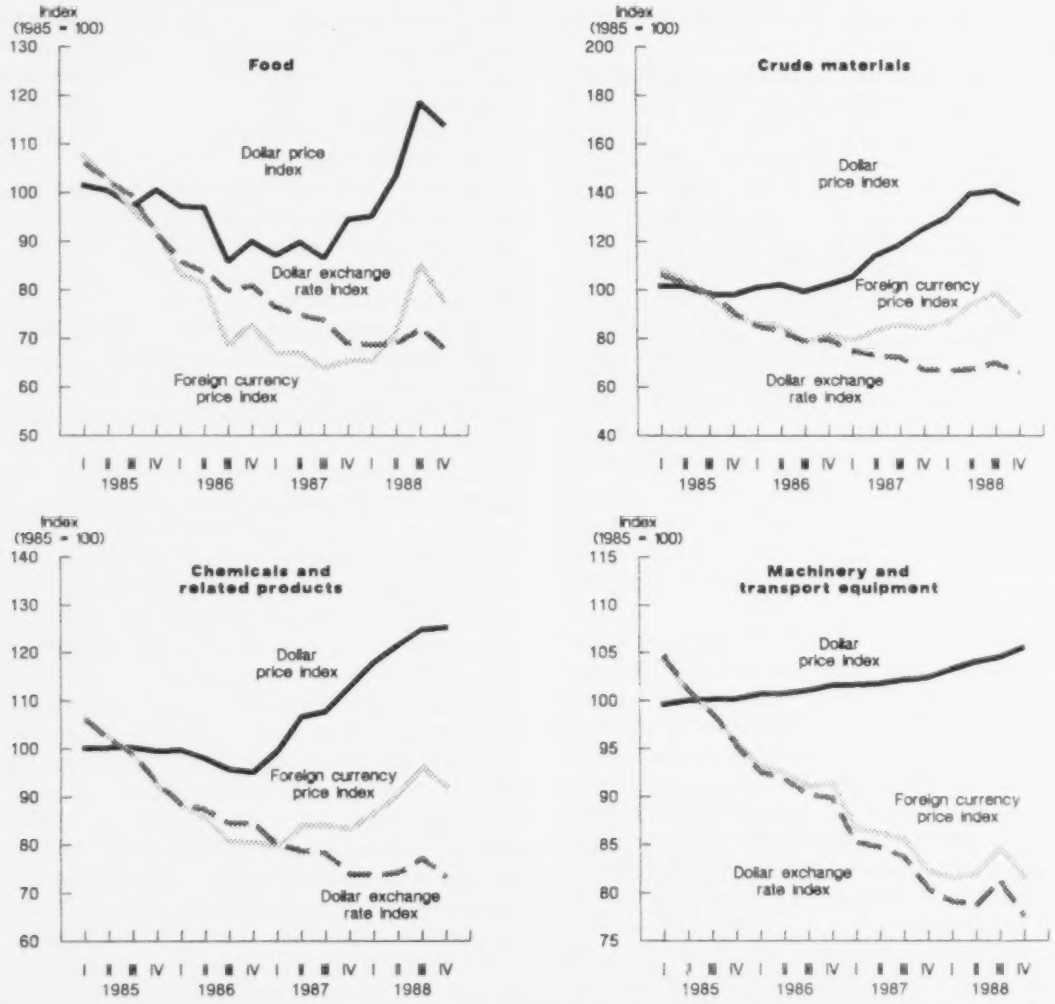
The substantial upswing in agricultural exports since fiscal 1986 initiated a drawdown of domestic grain and oilseed stocks that was accelerated by the 1988 drought.[97] As of January 1989, the estimates of ending stocks of grain in the United States were almost 17 percent lower for fiscal 1988 than those recorded for fiscal 1987, and were projected to fall another 55 percent in fiscal 1989.[98] The combination of steady growth in export volumes and the drought drained end-of-year U.S. stocks of grain and oilseeds in 1988 to their lowest levels since 1980.[99]

Accordingly, prices for exported wheat advanced 50.3 percent overall in 1988, bolstered by drought-reduced stock levels, a 14-percent decrease in production, a 9.8-percent decline in average crop yield, and an outbreak of wheat streak mosaic that afflicted the winter wheat crop. The greatest price increases occurred during the March–September period when drought-related factors drove prices up 61.8 percent overall. This pattern was followed by all varieties of exported wheat in 1988; the prices of soft red winter wheat and western white wheat recorded the largest 12-month and midyear gains. The spring wheat crop—which normally accounts for about 25 percent of total U.S. output—was the most severely affected by the drought.[101] As spring wheat production fell more than 50 percent, export prices of dark northern spring wheat rose 60.1 percent between March and December, and 37.5 percent for the year. Despite the drought, U.S. wheat exports rose 43.6 percent in fiscal 1988,[102] due primarily to the Export Enhancement Program coupled with generally strong foreign demand;[103] total wheat exports in fiscal 1988 increased to 40.5 million metric tons from the 28.2 million metric tons exported in fiscal 1987.[104]

The major corn growing areas of the Midwest were among the most severely stricken by the drought in 1988.[105] Consequently, prices for exported corn increased 37.2 percent between March and September, ending the year up 32.1 percent. Average corn crop yields plummeted more than 31 percent, from 119.4 bushels per acre in 1987 to 82.3 bushels per acre in 1988; the 1988 figure represented the lowest since 1974.[106] As a result, domestic corn production fell more than 14 percent, from 209.56 million metric tons in fiscal 1987 to 179.64 metric tons in fiscal 1988.[107] Meanwhile, the volume of corn exports expanded more than 12 percent, from over 39 million metric tons in fiscal 1987 to more than 44 million metric tons in fiscal 1988.[108] The growth in corn exports occurred partly on the strength of a flurry of purchases by the Soviet Union late in the fiscal year.[109]

The devastation wrought by the drought of 1988 failed to curtail the financial recovery of the U.S. farm sector that has been taking place since 1984. Farm land values continued to make gains during the year, while the incidence of farm loan problems did not increase substantially.[110] Higher crop prices generally offset the reduction in output, and most farmers sold large quantities of their accumulated grain stocks at the higher price levels. Consequently, farmers' net cash income in 1988 was estimated at $57 billion, the same

Chart 9. Quarterly indexes of U.S. dollar prices, foreign currency prices, and U.S. dollar exchange rates for selected categories of exports, 1985-88



Note: The foreign currency price index is calculated by multiplying the dollar price index by the U.S. dollar exchange rate index.

as the record level attained in the previous year; however, an uneven pattern of income distribution resulted from variations in the severity of the drought in different areas of the country. The year's higher, drought-inflated crop prices substantially reduced Federal Government payments to the farm sector. Outlays by the Commodity Credit Corporation totalled $13.1 billion in 1988, down almost 42 percent from $22.4 billion in 1987.

Crude materials. In a significant slowdown from the 22.3-percent pace recorded in 1987, exported crude materials prices rose just 8.6 percent overall in 1988 (chart 9), despite large 12-month increases of 23.8 percent for exported oilseeds, 19.4 percent for exported metal ores and scrap, and 14.0 percent for exported pulp and waste paper. The year's slower overall rate of price increase in the category stemmed primarily from a 7.2-percent decline in the prices of exported textile fibers, which had risen 22.8 percent in 1987, coupled with a much smaller 1.7-percent increase in exported wood prices, which had advanced 35.3 percent in the previous year.

The decline in the export prices of textile fibers in 1988 was primarily caused by a 14.4-percent decrease in the prices of exported cotton. A decline in retail demand for cotton apparel and a worldwide bumper crop in spite of the drought[11] were the principal factors underlying the year's

falling prices for this commodity. The slowed pace of price increases for exported wood in 1988 occurred chiefly because supplies of wood overtook demand in such important export markets as Japan, the United Kingdom, and Australia.

One factor that might help explain the overall deceleration of price increases for exported crude materials in 1988—which was apparent in all of the major commodity groups except oilseeds—was the slowed pace of the dollar's fall against a basket of currencies representing the major export markets for these products. After dropping 15.6 percent in 1987, the dollar strengthened against these currencies during the second and third quarters of 1988 before slumping once again in the fourth quarter to end the year with an overall 2.0-percent decline. As a consequence, much of the year's rise in the dollar-denominated prices of crude materials exports was reflected in their foreign-currency prices as well, which gained 6.5 percent on average during the year. This contrasted sharply with developments during 1987, when a larger 22.3-percent increase in the dollar prices of these goods resulted in an average increase in foreign-currency prices of just 3.3 percent, owing to the steep decline of the dollar against these currencies. (See chart 9.)

Unlike the prices of the other major product groups within the crude materials category, export prices of oilseeds rose faster in 1988 than in 1987; this acceleration was led by a 25.8-percent 12-month rise in exported soybean prices linked to the year's summer drought. Most of the year's increases occurred between March and September; during that period, export prices rose 33.8 percent before falling 13.9 percent in the final quarter. Between May and June, domestic prices shot up 22.5 percent, but only gained an additional 1.3 percent before falling 12.9 percent between September and December.[112]

The drought had the dual effect of reducing the size of the U.S. soybean crop in 1988 (fiscal 1989) by 22 percent while simultaneously putting downward pressure on domestic stocks accumulated from past harvests as the market sought to maintain consumption levels.[113] According to the U.S. Department of Agriculture, soybean stocks were almost 31 percent lower at the end of fiscal 1988 (October 1987 through September 1988) than at the end of fiscal 1987.[114] Furthermore, stocks at the end of fiscal 1989 are projected to be nearly 59 percent below fiscal 1988 levels, producing the lowest domestic stocks/use ratio since the drought of 1976.[115]

In contrast to the accelerated pace of price increases for exported oilseeds, the export prices of metal ores and scrap rose at a slower, but still rapid, annual rate of 19.4 percent in 1988, following the previous year's 30.1-percent increase. A 26.8-percent 12-month increase in the export prices of nonferrous base-metal scrap, in conjunction with a 16.0-percent rise in prices of exported iron and steel scrap, accounted for about 85 percent of the overall increase.

Rapidly increasing prices for exported aluminum scrap, concentrated in the first half, and for exported copper scrap during the second half underlay the overall increases in the nonferrous scrap category in 1988. Aluminum and copper waste and scrap are an important component of the overall supply of these metals on world markets. Consequently, the year's strong and growing demand for both metals affected not only the primary metal markets, but those for secondary or scrap metal as well.

Prices of domestically produced copper-base scrap rose 20.3 percent between December 1987 and December 1988, and 22.2 percent between June and December 1988; prices for copper and brass scrap slated for export rose 25.7 percent for the year and 18.1 percent during the second half. Scrap prices followed a pattern similar to that for primary copper during the year: prices for domestically produced cathode rose 26.7 percent between December 1987 and December 1988, and 38.2 percent in the last 6 months of the year.

Prices of domestically produced aluminum-base scrap rose 20.2 percent for the year as a whole, but fell 4.7 percent in the year's final 6 months; those for aluminum scrap sold to foreign customers rose 26.3 percent during the year, but fell 10.7 percent in its second half. Similarly, prices of domestically produced primary aluminum ingot (unalloyed) increased 19.7 percent during the year, but advanced just 5.8 percent between June and December.

Between March 1985 and December 1987, the dollar fell 35.7 percent against a basket of currencies representing the major export markets for U.S. produced metal ores and scrap. As a consequence, the foreign-currency prices of these commodities fell 24.3 percent during this period, despite a 17.3-percent increase in their prices in dollar terms. Exports of primary and semifabricated nonferrous metal products followed a similar pattern: the dollar fell 33.8 percent against the appropriate basket of currencies, while the foreign-currency prices of these products fell 21.0 percent in spite of a 24.8-percent increase in dollar-denominated prices.

As the dollar fell during this period, exports of primary and secondary copper and aluminum grew substantially in terms of physical volume: Exports of all copper products (including scrap) grew nearly 20 percent between the end of 1984 and the end of 1987,[116] while exports of unalloyed copper scrap rose by more than 68 percent during the same period.[117] Exports of all aluminum products grew nearly 25 percent between 1984 and 1987[118]; and 1988 scrap exports exceeded 1987 levels by more than 32 percent.[119] The Pacific Rim countries f South Korea, Taiwan and Japan—with South Korea becoming gradually more prominent—were among the most important export markets for U.S. copper and aluminum scrap during the 1984-87 period.[120] Competition for the limited supply of domestic scrap from this booming East Asian market helped boost prices in 1988.[121] Other factors included high prices for primary alu-

minum and copper that made scrap metal more attractive as a substitute,[122] and capacity constraints and production disruptions that hindered the growth of free-world output of primary metal during the year. (See section on imported intermediate manufactures.)

Outpacing the large price increases for aluminum and copper products during the year, nickel prices escalated rapidly in the first half of 1988. Import prices for nickel products (the United States produces no primary nickel) more than doubled between December 1987 and June 1988, climbing 133 percent before receding slightly in the year's final 6 months. As a consequence of rapidly rising nickel costs, stainless steel producers began to opt for nickel-bearing stainless steel scrap as a substitute for primary nickel.[123] Demand for this type of scrap improved steadily through the first 8 months of the year as a result, and prices rose to record levels as supplies tightened in the face of the increased demand pressures.[124] Between February and August, prices of domestically produced stainless and alloy steel scrap rose 38.6 percent; by December, prices had climbed 52.9 percent from the previous December. Much of the year's 16.0-percent increase in the export prices of iron and steel scrap is attributable to these rapid increases in the prices of stainless steel scrap.

Although much less important in the overall index movement than the rapid upward spiral of stainless scrap prices, export prices of carbon steel scrap also increased in 1988. Prices of domestically produced carbon steel scrap—a common input to steel production—rose 10.6 percent during the year. Concurrent with an unexpected increase in demand for steel mill products,[125] domestic supplies of ferrous scrap were tightened in 1988 when the summer heat wave curtailed both scrap processing and the demolition activities that produce scrap.[126]

Increased foreign and domestic demand also played a role in the 14.0-percent rise in the export prices of pulp and wastepaper in 1988.[127] Although domestic wastepaper prices fell 14.8 percent during the year due to an oversupply of newsprint in the Northeast and substantially reduced exports to the Far East,[128] domestic prices for papermaking woodpulp more than made up the difference, rising 25.2 percent; export prices increased 24.9 percent.

For U.S. producers of market pulp (that is, woodpulp produced for sale rather than for onsite consumption), 1988 represented the third consecutive year of recordbreaking increases in sales and prices.[129] Precipitated by a weakening dollar that spurred both domestic and foreign demand, the market pulp price recovery commenced in late 1985. As a consequence of the dollar's steady decline from that period, U.S. market pulp producers enjoyed a price advantage of between $15 to $20 per ton over most foreign competitors after mid-1986. This improvement in the competitive position of the U.S. industry on world markets came mostly at the expense of Scandinavian and European producers.

Indicative of this increase in competitiveness, U.S. exports of market pulp increased in 1988 to an estimated 5.68 million short tons, nearly 15 percent ahead of the 4.94 million short tons exported in 1987.[130] Moveover, exports accounted for 65 percent of all U.S. shipments of market pulp (in quantity terms) during the year.

As a consequence of rising prices, the value of U.S. exports of market pulp increased at a faster rate in 1988 than did the physical quantities.[131] The year's exports were valued at $2.93 billion, an increase of approximately 25 percent from the $2.35 billion recorded in 1987. In addition to strong export demand, two key factors help explain the year's significant increases in market pulp prices: high capacity utilization rates and low inventory levels. In 1988, the domestic market pulp sector operated at nearly 100 percent of capacity for the third consecutive year.[132] Moreover, by the middle of the year, producer inventories of market pulp in the United States amounted to the equivalent of a 10-day supply, well below the 30-day supply considered normal for the domestic industry.

Chemicals and related products. Following an 18.6-percent advance in 1987, export prices of chemicals and related products rose 11.1 percent in 1988. (See chart 9.) The exported chemicals category includes products such as basic organic and inorganic chemicals, plastic resins, medicinal and pharmaceutical products, and manufactured fertilizers. The driving force behind the year's large overall rise was the exported organic chemicals category, which comprises almost 24 percent of the index for chemicals and related products. In 1988, export prices of organic chemicals posted a strong 22.1-percent advance, following a larger 33.7-percent increase in 1987. Additionally, all the other major subcategories of exported chemical products posted gains during the year: The export prices of plastic resins, including polyethylene and polypropylene, rose 6 percent. Exported medicinal and pharmaceutical products such as vitamins, antibiotics and hormones edged upwards by 1.8 percent. Miscellaneous chemical materials and products, including disinfectants, insecticides, starches, and waxes, gained 7.0 percent. Manufactured fertilizers such as urea and diammonium phosphate increased 12.6 percent. Finally, the index for exported inorganic elements, oxides, and salts, including sodium hydroxide (caustic soda) and anhydrous ammonia, advanced 16.8 percent.

As for other industrial materials, the sharp price increases for many chemical products in 1988 reflected both heightened demand and high operating rates.[133] The 1987-88 period of economic expansion, lower oil prices, and a weak dollar revitalized the previously depressed U.S. chemicals industry.[134] In contrast to its current vigor, the industry had experienced a depressed period between 1982 and 1986, due to an economic recession that dampened demand, high energy and raw materials costs that cut profit margins, and a strong dollar that improved the competitive position of foreign producers and kept the lid on prices. According to the

Chemical Manufacturers Association, U.S. chemical producers realized a 12-percent gain in sales in 1988, producing an increase in net income of nearly 50 percent. Heightened foreign demand since 1986, stemming in part from the weaker dollar, was a key factor behind the revival;[135] the nominal value of chemical exports rose nearly 42 percent between 1987 and 1988, and is projected to increase another 4.5 percent in 1989.[136] Another important factor was the spate of restructuring and reorganization that the industry underwent to improve efficiency and competitiveness following the recession of 1982.[137]

In response to the burden of increased demand, the industry operated at an estimated 86 percent of capacity for the year as a whole, the highest rate since 1973; this represented a substantial recovery from the low 68-percent operating rate recorded during the recession year of 1982.[138] In particular, producers of such important chemical products as ethylene, plastic resins, and chlor-alkalies were operating at levels approaching 100 percent of capacity through much of the year.

Domestic producers of ethylene, the most important of the basic organic chemicals, operated at full capacity throughout 1988.[139] Ethylene is a colorless, flammable chemical of the hydrocarbon family. It is usually derived from petroleum and is used in the synthesis of organic polymers such as polyethylene, a plastic resin. In midyear, a series of explosions temporarily closed several major U.S. ethylene refineries. Coupled with the industry's already high operating rate, the unexpected plant closings resulted in a shortage of ethylene and its derivative products.[140] The market subsequently developed a "shortage mentality" that sparked a scramble for any available supplies and led to substantially augmented demand and higher prices in late spring and summer.[141] Partly as a result, domestic wholesale prices for ethylene advanced 69.0 percent for the 12-month period ended December 1988.

The substantial upswing in ethylene prices was a major force behind the sharp increase in the export organic chemicals index in 1988. Much higher export prices for ethylene glycol—a thick, liquid alcohol commonly used as an antifreeze or as an input in the manufacture of polyester fibers—propelled the index for exported alcohols, phenols, phenol-alcohols and their derivatives to a record 61.0-percent annual increase. In addition, rising export prices for two ethylene compounds—ethylene dichloride and ethylene dibromide—contributed greatly to the 29.2-percent advance in the index for exported hydrocarbons and their derivatives.

The ethylene shortage also affected the prices of plastics in 1988. Ethylene is a major input in the production of plastic resins,[142] which comprise a group of various organic compounds produced by polymerization, the process of uniting two or more single organic compounds. Examples of plastic resins include polyvinyl chloride and low- and high-density polyethylene, compounds which are commonly referred to as commodity resins. Commodity resins, in contrast to the more specialized engineering resins, are generally produced in great volume at low cost. The midyear shortage and sharply higher prices of ethylene helped boost plastics prices in the second half of 1988. In addition, the U.S. plastics industry experienced accelerated capacity utilization rates during the year as demand outstripped supply and producer inventories declined.[143] In response, domestic wholesale prices of both low-density polyethylene resins—which are commonly processed into plastic film products such as freezer bags and food wrap—and high-density polyethylene resins—which are commonly used for plastic containers—posted strong gains for the year, rising 39.5 percent and 33.9 percent, respectively.

Despite the sharply higher domestic plastics prices, the index for exported artificial resins, plastics, and cellulose registered a relatively sluggish 6-percent annual gain in 1988, following a record 25.4-percent increase in 1987. The sluggishness is largely attributable to a 4.3-percent decline in the index during the fourth quarter of the year. According to data from the U.S. Department of Commerce, the price decreases coincided with a sharp decline in the volume of plastics exports during November. The withdrawal of the People's Republic of China from the international plastics market late in the year was the key factor behind the slowdown. Comparing the November export volume for polypropylene—the year's most commonly exported plastic material—with the average monthly export volume for the first 10 months of the year, reveals that about 85 percent of the decline from the average figure was probably due to China's withdrawal.

After a rapid 32-percent advance recorded in 1987, the value of plastics exports rose at a much slower 3-percent pace in 1988.[144] Additionally, total industry shipments rose by an estimated 5.5 percent in constant 1982 dollars during the year, indicative of the increased demand faced by U.S. plastics producers. The U.S. trade surplus in plastics rose 41 percent between 1986 and 1988,[145] due chiefly to the surge in exports during 1987.

The market for chlor-alkalies was also significantly affected by the ethylene shortage in 1988. Chlor-alkalies consist primarily of two important industrial chemicals: chlorine and sodium hydroxide, more commonly known as caustic soda.[146] Caustic soda, which is used in making soap, rayon (a synthetic fiber), and paper, is a coproduct of chlorine production through the Castner-Kellner process. Chlorine finds its largest end-use in the production of the plastic resin known as polyvinyl chloride, in which it is combined with ethylene. Consequently, chlorine makers reduced production in mid-1988 in response to the unexpected shutdown of several ethylene plants.[147] This action resulted in a concurrent reduction in caustic soda production that produced extremely tight supply conditions and substantially boosted prices.[148] Additional factors that helped elevate prices of caustic soda during the year included production problems at domestic plants, the lure of higher prices in the export market, and strong demand from the pulp and paper industry.[149] In response, domestic wholesale prices of caus-

tic soda increased 49.4 percent between December 1987 and December 1988. The escalation of caustic soda prices was a key factor underlying the 16.8-percent rise in the index of exported inorganic elements, oxides, and salts during the year. Increases in the prices of anhydrous ammonia, traceable to a recovery in nitrogenous fertilizer demand, were an additional factor.

The manufactured fertilizers export index increased 12.6 percent in 1988, due largely to tight capacity conditions among domestic producers of ammonia, a key nitrogenous fertilizer. In contrast to the depressed conditions prevalent earlier in the decade, demand for fertilizers strengthened in 1987, reflecting the revival of the U.S. farm economy and increased foreign demand.[150] The recovery continued into 1988 with a 7-percent rise in the constant-dollar value of U.S. shipments of nitrogenous fertilizers such as ammonia.[151] Export demand remained strong and is expected to continue at high levels due to the weak dollar and increased purchases from large importers such as China and India.[152] Additionally, the 1988 drought is expected to encourage greater crop production in 1989, leading to a substantial increase in domestic fertilizer consumption. In response to the heightened demand pressures, U.S. ammonia producers operated at increasingly higher rates of capacity utilization in 1988, reaching full capacity in the year's second half. The result was higher prices for products such as anhydrous ammonia, diammonium phosphate, and urea, boosting both the inorganic elements, oxides, and salts index and the manufactured fertilizers index.

Machinery and transport equipment. U.S. exports of machinery and transport equipment, which account for slightly more than 45 percent of the all-export index, increased 3.0 percent in 1988. (See chart 9.) This was the largest annual rise in 4 years, with every major subindex recording price increases. Among the more detailed categories representing machinery and transport equipment, substantial price increases were reported for metalworking machinery (5.8 percent), specialized machinery (5.1 percent), general industrial machinery (4.7 percent), and power generating equipment (3.9 percent). Increased prices for production input materials, along with changing export demand on the world market, was responsible for much of the price movement within this index.

The 1988 annual price rise reported for exported metalworking machinery was a result of increased demand for American-made machine tools. U.S. machine tools have gained in popularity as the declining dollar has made them more affordable to foreign purchasers. Due to the lag time between the placement of an order and the actual transaction, the 1988 reported price increase represents transactions for orders placed in 1987. Because of this lag, the exchange rate factor which was responsible for much of the 1988 annual price rise for exported machine tools was a reflection of the more pronounced decline of the dollar that occurred in 1987.

Prior to 1988, exported parts of machine tools had been the major driver of the metalworking machinery price index. Due to the expense of purchasing new machinery, machine tool consumers had opted for reconstruction of their existing machinery; thus, substantial demand had pushed the prices of replacement parts upward while the prices for the machines had remained relatively unchanged. Contrasting with previous years, rising demand for the machines in 1988 led to an annual price increase of 6.7 percent, while the export price recorded for parts (4.2 percent) increased slightly less.

Many of the upward price movements in the machinery and transport equipment sector in 1988 were due to the rising costs of input materials required for production. Rising prices and escalating demand for iron and steel resulted in substantial export price increases for specialized machinery (5.1 percent), particularly civil engineering equipment, for which prices rose 5.5 percent in 1988. Because export demand for agricultural machinery was depressed throughout 1988, material price hikes generally were not passed along by U.S. manufacturers. The relatively minor price rise of 1.9 percent reflects the desire of agricultural machinery exporters to retain their market share by holding the line on price increases.

Despite an annual rise of 0.8 percent for office machines and automatic data processing (ADP) equipment, price decreases were recorded for many of the subgroups within this index. Office machines (−0.3 percent), automatic data processing equipment (−0.6 percent), digital computers (−0.4 percent), and ADP auxiliary storage units (−4.8 percent) all recorded substantial price decreases in 1988. Demand was responsible for the price declines noted above as the markets for these particular products contracted substantially in 1988.

The outlook for 1989 and beyond

In 1988, the value of U.S. merchandise trade totaled $765.1 billion, nearly 16 percent more than the $662 billion recorded in 1987.[153] In descending order of importance, the European Community (EC), Canada, Japan, Mexico, and Taiwan remained the most important U.S. trading partners in 1988, accounting for $522.9 billion, or more than 68 percent, of the year's total trade value. The EC and Canada, combined, accounted for $314.6 billion, or more than 41 percent, of the total value of U.S. merchandise trade during the year. In light of that fact, the potential importance of both the United States-Canada Free-Trade Agreement and the EC's Single Internal Market program, described briefly below, becomes clear. If they come to fruition as planned, these initiatives could have a significant impact on both the future shape of U.S. international trade and, consequently, future trends in international prices.

The United States-Canada Free-Trade Agreement (FTA) was signed on January 2, 1988, and was subsequently rati-

fied by the U.S. Congress in September, and by the Canadian Parliament in December. The FTA was designed to create "an increasingly open market for trade and investment in goods and services between the world's two largest trading partners,"[154] in accordance with article XXIV of the General Agreement on Tariffs and Trade (GATT), which provides for the formation of free-trade areas and customs unions.[155] The FTA represents the culmination of more than a century of repeated attempts to establish a comprehensive trade liberalization pact between the United States and Canada.[156] The agreement officially entered into force on January 1, 1989, immediately eliminating tariffs on products as diverse as computers, electronic calculators, fur coats, bourbon whiskey, animal feed, leather, ice skates, roller skates, skis, telephone sets, and motorcycles.[157]

In general, the FTA provisions contain three central components[158]: First, they provide for the gradual phase-out of all remaining tariff, and many nontariff, barriers by January 1, 1998.[159] Second, they establish a definite code of trade rules to reduce uncertainty in cross-border business and investment transactions.[160] Third, they set forth a formula for the resolution of trade disputes that may arise between the two nations, creating a United States-Canada Trade Commission to supervise the agreed-upon dispute resolution mechanism.[161] In addition, the FTA contains numerous provisions applicable to trade in specific economic sectors, including agriculture, wine and distilled spirits, road vehicles, energy, services, investment, and government procurement.

The value of total merchandise trade between the United States and Canada equaled $153.7 billion in 1988.[162] Total trade grew 16 percent between 1987 and 1988, following gains of 6.4 percent in 1986 and less than 1 percent in 1985. The greatest expansion occurred in U.S. exports to Canada. These exports increased nearly 20 percent in 1988, while U.S. imports from Canada rose less than 13 percent, resulting in a more than 18-percent reduction of the U.S. trade deficit with Canada, from $12.9 billion in 1987 to $10.5 billion in 1988.

The FTA is expected to increase the volume of trade between the United States and Canada, while promoting more U.S. investment in its neighbor to the north.[163] Canada, the fastest growing economy in the industrialized world for the past 6 years, is expected to remain an important and growing market for U.S. exports in 1989.[164] The expansion of exports in 1988 represented a steady increase across the board with no single commodity area standing out.[165] The FTA is expected to accelerate this trend.

In contrast to the United States-Canada Free-Trade Agreement, the EC's Single Internal Market program holds the potential for increasing the barriers to trade with the United States and other non-EC nations.[166] The program involves the adoption of 285 directives to establish new EC-wide regulations and product standards,[167] with the goal of removing all physical, technical, and fiscal barriers to internal trade.[168] Although the program is scheduled for completion on December 31, 1992,[169] most of the EC directives were slated for submission to the European Parliament in Brussels by late 1988.[170] As of January 1989, 279 pieces of legislation were being considered by the EC parliament.[171] If successful, the Single Internal Market program would result in a unified market, comprising 12 nations and 320 million people, with no internal barriers to the flow of goods, labor, or capital, and possessing unified standards, laws, and educational requirements.[172]

The United States has a large stake in avoiding an increase in external protectionism as the EC moves toward a unified market.[173] The EC represents the largest U.S. commercial partner. The value of merchandise trade between the United States and the EC totaled $160.9 billion in 1988,[174] representing 21 percent of the total value of U.S. foreign trade for the year. Furthermore, merchandise trade between the EC and the United States grew 13.5 percent in 1988, rising from $141.8 billion in 1987.

If new barriers are not erected, a unified EC market could increase trade with the United States in two ways: First, a single EC market should result in enhanced economic efficiency and improved economic growth, thereby increasing EC demand for exports from the United States and elsewhere.[175] Second, the harmonization of business regulations and product standards, together with the elimination of national non-tariff barriers,should lower costs, expand internal EC trade, and allow increased efficiency in production and marketing activities, thereby benefiting both U.S. exporters and U.S. affiliates producing in the EC.

Although the EC has indicated a commitment to avoid erecting additional barriers to external trade, certain EC directives involving trade in pharmaceuticals, services, and food products such as hormone-injected U.S. beef have given cause for concern.[176]As it moves towards unification in 1992, many observers believe that the EC could establish practices that would reduce market access for non-EC producers.[177] Examples include the establishment of a system of preferences for "European products" and "European companies" in some sectors, and the possibility that an element of reciprocity would be imposed regarding the benefits of internal liberalization as it applies to non-EC countries such as the United States. Consequently, the EC's move towards market unification has the potential to hinder or reduce trade between the United States and the EC, at the same time that it promotes trade among the EC's 12 member nations.

Eric J. Kruger, executive director of the economic and business environment program at the Conference Board Inc., views the United States-Canada Free-Trade Agreement and the EC's Single Internal Market program as part of a larger trend towards regional trading blocs in North America, Europe, and East Asia.[178] Kruger believes that the United States-Canada Free-Trade Agreement will be ex-

panded in the 1990's to include Mexico, the Caribbean, and possibly even the Philippines. Moreover, he predicts that Japan and South Korea will eventually dominate a powerful trading bloc in East Asia. In his view, these trading blocs will allow freer trade within their own borders but will be protectionistic toward each other. Finally, he expects that, as a consequence of its unified internal market, the EC will supplant Asia as the United States' most formidable competitor in the global trading arena. If Kruger's predictions prove correct, U.S. trading patterns could change substantially in the 1990's. Significant shifts in U.S. trading patterns, and in the international trading environment in general, would necessarily have implications for international price trends in 1989 and beyond. □

FOOTNOTES

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[1] Price developments discussed in this article are based on data from the Bureau of Labor Statistics' International Price program (IPP). That program produces import and export price indexes based on the Standard International Trade Classification (SITC) scheme. Both indexes use a modified Laspeyres formula. Price data are collected for more than 22,000 products, and are not seasonally adjusted. Beginning with data for the first quarter of 1988, released in April, IPP indexes were weighted by the value of trade in 1985. (Formerly, the indexes had been weighted by the value of trade in 1980.) In addition, the indexes were recalculated from 1985 forward using the new weights. The Bureau also publishes these series by Standard Industrial Classification (SIC), as determined by the U.S. Office of Management and Budget, and end-use classifications as developed by the U.S. Department of Commerce's Bureau of Economic Analysis (BEA).

[2] These results are based on the International Price Program's nominal average exchange rate indexes for all imports and all exports. The average exchange rate indexes measure the change in the price of trade-weighted baskets of currencies against the dollar and are designed to match the export and import price index series published by BLS at the 2-digit, 1-digit, all-export, and all-import levels as defined by the Standard International Trade Classification, Rev. II system.

[3] See "Foreign Exchange Rates," *Federal Reserve Bulletin*, May 1985, p. A68 and July 1988, p. A68. Figures are based on monthly averages for February 1985 and December 1987.

[4] The pass-through rate is defined as the proportion of a given exchange rate shift that an exporter allows to be reflected in the foreign currency price of a product (that is, the price denominated in the currency of the country of destination or importing country). For example, a 100-percent pass-though rate indicates that the home currency price of a particular product (the price denominated in the currency of the exporting country) remained unchanged, while the change in the foreign currency price fully reflected the exchange rate shift. Conversely, a pass-through rate of 0 percent signifies that the foreign currency price of a product remained unchanged while the change in the home currency price fully compensated for the shift in exchange rates.

[5] The nominal average exchange rate indexes measure the average change in the value of a dollar relative to a basket of foreign currency units. The reciprocals of these indexes, therefore, estimate the average change in the value of a basket of foreign currencies as measured in dollars. The reciprocal of an average exchange rate index may be calculated by dividing 100 by the index value, and then multiplying by 100.

[6] This result was obtained by dividing 22.5 percent, the change in U.S. dollar prices of all imported products except fuels for the period, by 49.7 percent, the change in the reciprocal of the average exchange rate index for this category of products during the same period. This demonstrates the method for calculating pass-through rates for any given category of imported products using these data. For a given category of export products, a pass-through figure may be calculated by dividing the change in the appropriate foreign currency price index for a given period by the change in the appropriate average exchange rate index during the same period.

[7] This result was obtained using the foreign currency price index for all exported products. The foreign currency price index for a given category of exports or imports is calculated by multiplying the appropriate average exchange rate index by the U.S. dollar price index for the same product category.

[8] "Treasury and Federal Reserve Foreign Exchange Operations, November 1987–January 1988," *Quarterly Review* (Federal Reserve Bank of New York), Winter 1987-88, p. 57.

[9] "Treasury and Federal Reserve Foreign Exchange Operations, May-July 1988," *Quarterly Review* (Federal Reserve Bank of New York), Summer 1988, p. 90.

[10] "Foreign Exchange Rates," *Federal Reserve Bulletin*, October 1988, p. A68.

[11] "Treasury and Federal Reserve Foreign Exchange Operations, August-October 1988," *Quarterly Review* (Federal Reserve Bank of New York), Autumn 1988, p. 67.

[12] *Ibid.*, p. 69.

[13] See "Foreign Exchange Rates," *Federal Reserve Bulletin*, February 1989, p. A70, and July 1988, p. A68.

[14] "Export and Import Prices," *Economic Trends* (Federal Reserve Bank of Cleveland), August 1988, p. 23.

[15] *Ibid.*

[16] *Ibid.*

[17] *U.S. Department of Commerce News*, FT-900 (Bureau of the Census), December 1988.

[18] "Export and Import Prices," *Economic Trends*, August 1988, p. 23.

[19] *The Economist*, Mar. 18–24, 1989, p. 92.

[20] The Group of Seven nations include the United States, Japan, West Germany, Britain, France, Italy, and Canada.

[21] *Quarterly Review*, Autumn 1988, p. 64.

[22] *Economic Review* (Federal Reserve Bank of Atlanta), July-August 1988, p. 10.

[23] See *Producer Price Indexes* (Bureau of Labor Statistics, various issues). These and all other figures referring to changes in the domestic prices of certain products may be found using table 6 of *Producer Price Indexes* for the appropriate months.

[24] *Consumer Electronics Annual Review* (Washington, Electronic Industries Association, 1989), p. 26.

[25] The European Community comprises the United Kingdom, the Federal Republic of Germany, Denmark, Ireland, the Netherlands, Belgium, Luxembourg, France, Spain, and Portugal.

[26] This association includes Mexico, Colombia, Venezuela, Ecuador, Peru, Bolivia, Chile, Brazil, Paraguay, Uruguay, and Argentina.

[27] *U.S. Department of Commerce News*, FT-900, December 1988.

[28] *Survey of Current Business* (U.S. Department of Commerce, Bureau of Economic Analysis), Mar. 24, 1989.

[29] *1989 United States Industrial Outlook* (U.S. Department of Commerce, International Trade Administration, January 1989), p. 12.

[30] *U.S. Department of Commerce News*, FT-900, December 1988.

[31] *1989 United States Industrial Outlook*, p. 12.

[32] Omnibus Trade Law of 1988, P.L. 100–418, Sec. 1931.

[33] *Weekly Petroleum Status Report*, DOE-EIA-0208 (88–51) (U.S. Department of Energy, Energy Information Agency), Dec. 9, 1988, p. 3.

[34] *Monthly Energy Review*, DOE-EIA-0035 (88–09) (U.S. Department of Energy, Energy Information Agency), September 1988, p. 16.

[35] *Monthly Energy Review*, DOE-EIA-0109 (88–12) (U.S. Department of Energy, Energy Information Agency), December 1988, p. 17.

[36] *Monthly Energy Review*, DOE-EIA-0035, p. 17.

[37] *Petroleum Intelligence Weekly*, Feb. 6, 1989, p. 5.

[38] *Weekly Petroleum Status Report*, DOE-EIA-0208 (88–25) (U.S. Department of Energy, Energy Information Agency), June 10, 1988, p. 3.

[39] *Monthly Energy Review*, DOE-EIA-0035 (88–12) (U.S. Department of Energy, Energy Information Agency), March 1989.

[40] *Petroleum Intelligence Weekly*, Feb. 6, 1989, p. 5.

[41] *Ibid.*

[42] *Ibid.*

[43] *Natural Gas Monthly*, DOE-EIA-0035 (89–01) (U.S. Department of Energy, Energy Information Agency), March 1989, p. 9.

[44] *Natural Gas Monthly*, DOE-EIA-0130 (88–12) (U.S. Department of Energy, Energy Information Agency), February 1989, p. 9.

[45] *Ibid.*

[46] See footnote 7.

[47] *1989 United States Industrial Outlook*, p. 18–1.

[48] Peter Scolieri, "Prices Fail to Muffle Boom," *Specialty Steels*, A Supplement to *American Metal Market/Metalworking News*, Oct. 24, 1988, p. 4A.

[49] "What the Sudden Spiral in Metal Prices Means," *Business Week*, Apr. 25, 1988, p. 116.

[50] David M. Blitzer, "Trends and Projections," *Standard and Poor's Industry Surveys*, Jan. 12, 1989, p. 4.

[51] See "Industrial Production," *Federal Reserve Statistical Release*, G.12.3, Jan. 18, 1989.

[52] Bill Schmitt, "Copper, Aluminum Expected to Drop in Price During '89," *American Metal Market*, Jan. 18, 1989, p. 3.

[53] Lindley H. Clark, Jr., "U.S. Manufacturing is Badly Out of Balance," *The Wall Street Journal*, Mar. 23, 1988, p. 26.

[54] *Ibid.*

[55] "Why the Economy Isn't Overheating This Time," *Business Week*, Oct. 3, 1988, p. 90.

[56] "Output, Capacity, and Capacity Utilization," *Federal Reserve Bulletin*, March 1989, p. A48.

[57] *Ibid.*

[58] "What the Sudden Spiral in Metal Prices Means," p. 116.

[59] "Why the Economy Isn't Overheating This Time," p. 50.

[60] *1989 United States Industrial Outlook*, p. 18–9.

[61] "Two Stainless Executive Hit Prices for Nickel," *American Metal Market*, May 9, 1988, p. 8.

[62] Justine Gerety, "Alloying Agents are Top Concern," *Specialty Steel*, p. 4A.

[63] "Why the Economy Isn't Overheating This Time," p. 90.

[64] *1989 United States Industrial Outlook*, p. 18–7.

[65] "Record Low Stocks Send Tags Soaring, Fray Nerves of Producers, Consumers, Dealers," *Metals Week*, Oct. 24, 1988, p. 8.

[66] "The Economist Commodity Price Index," *The Economist*, Jan. 21–27, 1989, p. 103.

[67] "Range-trading Spiked by Peruvian Rumbles," *Metals Week*, Jan. 16, 1989, p. 7.

[68] *Ibid.*

[69] Frederick R. Demler, "Be Prepared to Pay More for Copper, Analyst Says," *Copper and Brass Service Centers, American Metal Market, Special Issues* (New York, Fairchild Publications), Mar. 29, 1989, p. 14A.

[70] *Ibid.*

[71] *Ibid.*

[72] *Ward's Automotive Reports*, Jan. 9, 1989, p. 1.

[73] *Ibid.*

[74] *Ibid.*

[75] *Ibid.*

[76] *Ward's Automotive Reports*, Oct. 17, 1988, p. 313.

[77] *Ward's Automotive Reports*, Nov. 28, 1988, p. 1.

[78] *Automotive News*, Jan. 2, 1989, p. 45.

[79] *Ward's Automotive Reports*, Jan. 9, 1989, p. 1.

[80] *Automotive News*, Mar. 17, 1989, p. 45.

[81] *1989 United States Industrial Outlook*, p. 34–1.

[82] *U.S. Department of Commerce News*, FT-900.

[83] "Revitalization of Factory Automation," *Paine Webber*, Feb. 9, 1989, p. 4.

[84] Mark Drabenstott and Alan Barkema, "U.S. Agriculture Shrugs Off the Drought," *Economic Review* (Federal Reserve Bank of Kansas City), December 1988, p. 33.

[85] *Rice Situation and Outlook Report*, RS–53 (U.S. Department of Agriculture, Economic Research Service), October 1988, p. 3.

[86] The Export Enhancement Program (EEP), announced by the U.S. Department of Agriculture on May 15, 1985, enables U.S. exporters to meet prevailing world prices for targeted commodities and destinations. The stated purpose of the program is not to undercut world market prices, but to meet competition from other subsidizing countries.

[87] Drabenstott and Barkema, "U.S. Agriculture," p. 39.

[88] *Outlook for U.S. Agricultural Exports* (U.S. Department of Agriculture, World Agricultural Outlook Board, Economic Research Service, and Foreign Agricultural Service), Nov. 29, 1988, p. 7.

[89] *World Agricultural Supply and Demand Estimates*, WASDE-226 (U.S. Department of Agriculture, Economic Research Service and Foreign Agriculfural Service), Jan. 13, 1989, p. 23.

[90] *Focus, A Publication of the U.S. Feed Grains Council* (Washington, U.S. Feed Grains Council), Dec. 30, 1988, p. 1.

[91] *Focus*, Dec. 2, 1988, p. 1.

[92] *Outlook for U.S. Agricultural Exports*, p. 1.

[93] Drabenstott and Barkema, "U.S. Agriculture," p. 39.

[94] *Outlook for U.S. Agricultural Exports*, p. 1.

[95] *Focus*, Nov. 18, 1988, p. 2.

[96] *Outlook for U.S. Agricultural Exports*, p. 1.

[97] Drabenstott and Barkema, "U.S. Agriculture," p. 34.

[98] *World Agricultural Supply and Demand Estimates*, p. 4.

[99] Drabenstott and Barkema, "U.S. Agriculture," p. 34.

[100] *Ibid.*

[101] Drabenstott and Barkema, "U.S. Agriculture," p. 33.

[102] *Outlook for U.S. Agricultural Exports*, p. 4.

[103] Drabenstott and Barkema, "U.S. Agriculture," p. 34.

[104] *Outlook for U.S. Agricultural Exports*, p. 4.

[105] Drabenstott and Barkema, "U.S. Agriculture," p. 33.

[106] *Ibid.*, p. 34.

[107] *World Agricultural Supply and Demand Estimates*, p. 4.

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